POSTRESETTLEMENT REFUGEE MENTAL HEALTH TRAJECTORIES

by

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ABSTRACT

The current study evaluated longitudinal mental health trajectories for 107 refugees resettled in Utah during 2011. The aims of this study were to: (1) identify a set of trajectory classes that reflect important variations in mental health experienced by refugees during the course of their first postresettlement year, (2) describe the characteristics of each identified trajectory class, and (3) determine significant pre and early postresettlement predictors of trajectory class membership. Mental health outcomes were measured monthly across the first postresettlement year using the Hopkins Symptom Checklist (HSCL-25). Growth Mixture Modeling (GMM) was employed to extract a discrete number of latent trajectory classes from the study sample. Bivariate analyses and Multinomial Logistic Regressions were employed to predict trajectory class membership. Results suggested a 5-Class trajectory model. Significant predictor variables were identified and discussed within the context of theories of refugee adaptation as well as the broad coping and resilience literature. Implications for clinical practice, resettlement policy, and future research were also addressed.

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CHAPTER I

INTRODUCTION

The global population of people forcibly displaced by war, persecution, and oppression is estimated to be 43.7 million. From this overall displaced population, the United Nations High Commissioner for Refugees (UNHCR) estimates that 15.4 million people have fled worldwide into neighboring countries and are presently designated as refugees. These statistics represent the highest number of refugees recorded during the past 15 years (UNHCR, 2010). As recent conflicts in the Middle East and chronic instability and strife in parts of Africa show, forced displacement and the corresponding need to provide humanitarian refuge will continue into the foreseeable future.

While refugee status represents an important level of protection from immediate danger, the category is itself associated with an increased risk for psychological distress. Embedded within the definition and experience of establishing refugee status are horrific examples of violence and loss. Refugees are often forced to experience violent expulsion from their homes, villages, and country and are subject to starvation, forced labor, torture, and the killing of family members, friends, and neighbors (Mollica et al., 2007).

For a small minority of the global refugee population, permanent resettlement to a third country represents an end to the process of flight from dislocation and persecution. The benefit of successfully escaping a conflict-torn region is, however, tempered by new struggles that emerge as refugees negotiate the process of establishing roots in a country in which they have little personal familiarity.

Forced displacement, refugee flight, and the transition through resettlement represent a gauntlet of potential mental health challenges. Refugees not only lose their livelihoods, loved ones, and country, they also may experience a loss of identity, hope for the future, and sense of personal meaning or purpose. Such psychological consequences are not limited to the initial experience of displacement but rather continue to shape the ongoing process and struggle for these individuals to adjust and redefine their new reality. The psychological and functional impairment from this experience can be substantial and impacts not only the refugees themselves but also the societies that agree to resettle them (Bhugra, Craig, & Bhui, 2010).

Despite the challenges inherent in forced displacement, flight, and the resettlement experience, many refugees navigate the adjustment process successfully and live their lives free of long-term or significant psychological distress (Bonanno & Mancini, 2012). This alternative narrative suggests that resilience and protective factors are also at play and may explain how some refugees can experience stable and healthy functioning in the face of otherwise extremely stressful events. Indeed, cultural and individual differences shape the

perception of what is stressful, what coping strategies are accepted, and what resources are in place for assistance (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004).

In this context, determining which individuals are likely to require greater mental health attention during specific periods of the resettlement process can facilitate the efficient and targeted use of the limited resources available to service providers. Early identification of factors that increase or decrease the ability of refugees to cope with the resettlement process, as well as determining the underlying patterns of change in mental health over time for this population, are critically important areas for further research.

This research project identified distinct trajectory classes of refugee mental health symptom distress expressed over the course of the first year postresettlement in Salt Lake City, Utah. Additional analyses examined refugee pre and early postresettlement factors as predictors of trajectory class membership. The review that follows provides a context for this study and a rationale for examining mental health trajectories during the refugee resettlement process.

An Overview of Refugee Resettlement in the United States

The modern and formalized US refugee resettlement system began as a limited program to provide refuge to intellectual and political elites fleeing Nazi forces prior to and during World War II (Bhugra et al., 2010). US refugee resettlement has since evolved into a complex network of government and nonprofit social service agencies assisting an ever-changing array of diverse persons

and global populations forced to flee their country of origin due to conflict or persecution.

A refugee is defined as an individual who is displaced outside of his or her home country and is unable or unwilling to return due to a well-founded fear of persecution, violence, or death based on the individual's race, religion, nationality, membership in a social group and/or, political opinion (UN General Assembly, 1954). Although the issue of displaced persons fleeing conflict and in search of refuge in a less hostile, but foreign country has deep historical precedence, formalized policy regarding the legal admission and assistance of refugees is a contemporary phenomenon.

In 1948, the first refugee legislation was enacted by the US Congress, allowing for Europeans displaced by the Second World War to legally enter into the US under the designation of refugee (US Congress, 1948). Later laws provided for the admission of persons fleeing from repressive regimes in Eastern Europe, Asia, and the Caribbean. With the fall of the South Vietnamese regime in 1975 and the increased repression of other South East Asian governments, the US faced a challenge of resettling hundreds of thousands of Indochinese refugees. To create a coherent system for dealing with the needs of the on-going refugee resettlement processes and with the increasing numbers of refugees, the US Congress passed the Refugee Act of 1980. This act standardized the provision of resettlement services available to refugees who were admitted into the US. The Refugee Act also made a provision for a consistent annual admission of refugees whose overall census at any given time is determined by the President of the United States. The Refugee Act of

1980 set the primary objective of the US resettlement program as the successful socio-economic integration of refugees into American society (Majka, 1991). This objective remains today as the foundational doctrine of the modern US resettlement system.

For the millions of refugees around the world, there are 3 durable solutions to resolve their status. First, they are allowed to repatriate to their country of origin. Most refugees prefer this option as it represents a return to home and familiarity. However, the opportunity for most refugee populations to return to their country of origin, even decades after the initial conflict has ended in their home country, is not guaranteed. This repatriation uncertainty is evidenced by the fact that large refugee populations continue to live in camps or along border regions of their home countries following their flight many years earlier from the initial conflict.

A second durable solution is for refugees to integrate into the country of first asylum. This option, though often less preferred than returning home, permits the refugee to remain in a geographic and cultural region similar to their country of origin. However, many countries bordering conflict zones demonstrate the same risk factors for instability and conflict that refugees experienced prior to their initial flight.

Countries of first asylum may offer only the most basic form of safety that a refugee can establish by crossing an international border into a neighboring country. Rather than a formalized process whereby a country grants legal asylum status to an individual applicant, countries of first asylum are typically unprepared

for the sudden influx of refugees displaced by the outbreak of war and persecution. In this sense, a country of first asylum represents a destination of necessity rather than choice. Furthermore, economic difficulties and ethnic tension can lead countries of first asylum to dramatically restrict the freedoms and movement of refugees, effectively preventing their long-term integration.

For those refugees unable to return to their home country and unable to integrate into their country of first asylum, the last durable solution is resettlement to a third country. Only after a person has (1) fled his or her country of origin, and (2) demonstrated that this departure was due to a well-founded fear of persecution or death, can the individual be granted with the legal designation of "refugee" by the UNHCR. Thereafter, the refugee may initiate the last durable solution and be referred to a third country for resettlement (Bhugra et al., 2010).

Refugee resettlement represents a limited but important component of international refugee policy and cooperation (UNHCR, 2011). During the past 5 years, approximately 444,000 refugees were resettled in third countries. The UNHCR reports that less than 1 % of the global refugee population will eventually be resettled in a third country. In 2011, a total of 79,800 refugees were admitted to 22 different resettlement countries. The US, as a destination, resettled the majority of this total number, accepting 51,500 refugees that year (UNHCR, 2011). The majority of the refugees resettled by the US in the past 5 years originated from Iraq, Burma, and Bhutan (US Department of State, 2013).

The US has a long history of providing refugee status to populations driven from their countries of origin by war, political change, and social, religious, and

ethnic oppression. Since 1975, the US has resettled nearly 3 million refugees (US Census Bureau, 2010). In the US, all referred refugee cases pass through a rigorous legal and security screening process to determine eligibility for resettlement. Once a refugee's application is approved, the refugee is assigned to one of a variety of regional programs contracted to provide resettlement services in coordination with the US State Department. Transportation to the US is arranged by the International Organization for Migration (IOM). Refugees are expected to repay the IOM in monthly installments for all transportation costs loaned to them beginning 18 months after the refugee arrives in the US.

Core services provided by US resettlement agencies include locating initial housing, provision of basic household needs, clothing, and food, community orientation, referrals to schools, healthcare, social services, and employment counseling. These services are funded through Federal, State and local governments as well as through private and nonprofit sources. Refugees can apply for permanent residency after 1 year postresettlement. They are then eligible to become US citizens 5 years after their initial arrival to the US as a refugee.

Relative Prevalence of Mental Disorders in Resettled Refugees

While resettlement represents an important option for reducing the immediate physical danger and suffering faced by refugees, the increase in stability and safety inherent in the process is not always reflected in the psychological experience of this transition. Reviewing the body of refugee mental health outcomes literature, a common narrative emerges pointing to greater risk for the

development of psychological distress within resettled refugee populations (Bhugra et al., 2010). This heightened mental health risk is thought to be related to the sudden traumatic nature of refugees' initial forced displacement and the subsequent flight experience and adjustment demands. Yet, within this context, research results indicate that there remains substantial variability in refugee mental health outcomes. The findings of 2 recent meta-analyses of the refugee mental health literature indicate significant variance in the estimated prevalence rates for psychiatric disorders in resettled refugees.

In a comprehensive review of 20 different studies of postresettlement refugee mental health, Fazel, Wheeler, and Danesh (2005) compared the prevalence rates for psychiatric disorders in the general population of Western countries with those of refugees accepted for resettlement. They found that 5% of adult refugees in Western countries had Major Depressive Disorder (MDD), 4% had Generalized Anxiety Disorder (GAD), and 10% had Posttraumatic Stress Disorder (PTSD). By comparison, current prevalence rates among age-matched US born adults for the same disorders are estimated at 7% for MDD, 3% for GAD, and 3.5% for PTSD (National Institute of Mental Health, 2005). These prevalence rates suggest a similar frequency of MDD and GAD for refugees and Western-born populations and significantly higher rates of PTSD in refugees.

However, in a more recent meta-analysis of 35 studies, Lindert, von Ehrenstein, Priebe, Mielck, and Brähler (2009) found that refugees may experience prevalence rates of psychiatric disorders at a much higher level than their host country counterparts. The authors identified combined prevalence rates for MDD as

high as 44% and GAD as high as 40%. The study did not include an analysis of PTSD prevalence rates. These meta-analyses highlight a disparity in the literature on the relative prevalence of depression and anxiety in resettled refugees to date and elevated rates of PTSD as noted by Fazel et al. (2005).

A potential explanation for the lack of consensus in prevalence rates of psychiatric disorders is that most refugee mental health research relies on assessment of distress at a single point in time. This does not adequately account for the developmental course of mental health symptom expression. Furthermore, while some studies combine different populations of refugees together, others focus on specific refugee groups, which can vary in terms of their level of displacement distress, flight, and the consequences of their resettlement experiences.

While these meta-analytic approaches to studying refugee mental health outcomes allow for a comprehensive characterization of extant data, the numbers likely oversimplify the complex interplay of risk and resilience and the developmental course of mental health distress among refugees over time. Simple prevalence rates provide a poor understanding of the course and longitudinal impact of psychological distress. However, within the context of this evolving disparity of mental illness prevalence rate estimations, conceptual models have been posited and significant foundational research on the predictors of refugee mental health outcomes have emerged.

Theoretical Models of Refugee Psychological Adjustment

As a means of structuring a more complete understanding of the sources of mental health risk and resilience inherent in the refugee experience, Silove (1999; 2006) developed an integrated conceptual framework of refugee psychological adaptation. This model posits that forced displacement, flight, and resettlement have a profound impact on the interaction of 5 core psychosocial systems:

1) *Personal Safety:* Refugees face multiple threats to their physical and emotional wellbeing both concurrent with the initial displacement event and for prolonged periods thereafter. This experience can alter the expectancies of individuals regarding the relative safety and stability of their present and future environments.

2) *Attachment and Bond Maintenance:* Refugees typically experience a severe disruption of their interpersonal bonds during the displacement, flight, and resettlement processes. Refugees are often forcibly and violently separated from their loved ones, property, and home. They may also face a loss of their sense of belonging, social familiarity, and cultural cohesion.

3) *Justice:* Forced displacement represents a clear violation of basic human rights. During this experience, refugees may be forced to make nearly impossible decisions that dehumanize and degrade their sense of justice. An inability to address the acts perpetrated against them and knowledge that similar violations continue to go unpunished may further erode a person's sense of justice.

4) *Identity and Role Functioning:* Refugees can face a nearly complete loss of autonomy as a displaced person. They may live protracted lives anonymously and be dependent on the realities available to them in refugee camps. After resettlement, refugees often face a lack of recognition of previous roles, status, and qualifications. When successful adaptation is negotiated, the experience of partial acculturation may reflect functional benefits but may simultaneously be perceived as a loss of cultural continuity and identity.

5) *Existential Meaning:* The tremendous human cruelty experienced through forced displacement may undermine the belief of the refugee in the basic beneficence of life and humanity. Thereafter, refugees may search in vain to find a reason for the hardships they endured. In the context of a damaged existential framework, the person may face a crisis of trust, faith, and meaning that can lead to social and emotional isolation.

Under normal and stable circumstances, these psychosocial systems function together and empower the effective integration of individual needs with the psychological and social realities of postresettlement (Silove, 1999; 2006). Refugees, however, as a result of their forced displacement and adjustment challenges, may encounter a breakdown in the effective interplay of these systems resulting in maladaptive coping strategies and ultimately psychopathology.

While Silove's model provides for a broad psychological conceptualization of the refugee experience, standing alone, it does not adequately address the process by which refugees come to experience stress and the strategies they employ to manage it. Additional theoretical perspectives pulled from the extensive literature on stress and coping may provide useful heuristics for further conceptualizing the challenges encountered during the resettlement experience.

One such adjunct to Silove's important but broadly defined integrated conceptual framework is the Transactional Model (Lazarus & Folkman, 1984). This model of stress and coping emphasizes the centrality of the individual in the process of appraising potential threats and perceived capacities to cope. The model posits that there is a primary appraisal that initially determines if an event is threatening. This is followed by a secondary appraisal that evaluates the relative access to resources for coping with the perceived threat.

The ability to cope with stressful events (e.g., forced displacement, refugee flight, and resettlement) is conceptualized through the Transactional Model, as dependent on the ability to match the perceived threat with the appropriate and sufficient personal or environmental resources. Key to this process is the extent to

which the individual believes they can control the outcome of the stressful event through the effective mobilization of resources and coping strategies. This component of the model aligns closely with Social Cognitive Theory (Bandura, 1997) and the concept of self-efficacy. Applied to the stresses of resettlement, the broader concept can be construed as resettlement self-efficacy. In this way, the self-appraisal that refugees make concerning their capacity to cope with the perceived stresses of resettlement may translate into the relative effectiveness of their subsequent coping strategies.

Psychological Risk Factors and the Refugee Experience

A growing body of research documents the deleterious mental health impact of forced displacement and the challenging contextual conditions for refugees' postresettlement. Porter and Haslam's (2005) meta-analysis combined pre and postdisplacement factors over 56 studies and found that refugees had worse mental health outcomes than nonrefugee comparisons. Specifically, poorer outcomes were observed for refugees who were older, more educated, female, and who had higher predisplacement socioeconomic status.

Refugees, as a result of the circumstances of their forced displacement, often face greater barriers to adjustment than immigrants who choose to leave their country of origin for economic or social reasons. One explanation for this difference may be that refugees enter the US based upon well-founded fears of persecution or even death and not for economic or social advantage. Unlike their traditional immigrant counterparts, refugees have no choice but to flee for their lives and the

relative security of refugee status. Once flight is initiated, a refugee may find it impossible to return home. The displacement event, therefore, does not represent an isolated and reversible decision; rather, the often traumatic and irreversible conception of the refugee experience continues to follow the individual throughout his or her flight and adjustment process. At each turn, refugees may face reminders of the forced nature of their displacement. Each subsequent barrier to adjustment is approached within the context of the original displacement event rather than simply a proximal barrier to which they willfully submit. In this regard, the psychological delineation between traditional immigrants and refugees is clear: While both groups face significant barriers to successful adjustment, the former initiates migration as a willful choice and the latter experiences it as a violent imposition. Supporting this explanation, poor social and economic adjustment trends are associated with the upheaval and instability of refugee displacement in comparison to the typical immigrant adjustment experience (Aycan & Berry, 1996; Beiser, Johnson, & Turner, 1993; Westermeyer, Callies, & Neider, 1990; Young & Evans, 1997).

Forced Displacement

It is important to contextualize the initial forced displacement experience faced by refugees. The experience is most typically colored by sudden unexpected violence, fear, and loss. Refugees who flee armed conflict and persecution often face life-threatening stressors for themselves and members of their families. These premigration traumas may be extensive and challenge the limits of an individual's ability to cope (Prendes-Lintel, 2001). The vast majority of refugees report being

separated from their families, experiencing violence, and being deprived of basic needs, loss of property, hunger, homelessness, and social isolation. Traumatic experiences such as being raped, kidnapped, and tortured are commonly reported by refugee groups (Keyes, 2000).

The psychological literature describes a range of mental health and developmental sequelae associated with exposure to forced displacement among refugees (Silove & Ekblad, 2002). Trauma and the stressors of living life in exile change the way a typical refugee might construe the past, present, and future. These events can also challenge a person's belief in a just and rational world. The inability to regain a sense of identity, agency, and meaning in life can lead to feelings of helplessness and powerlessness manifest in poor social functioning or psychological symptomology (Davidson, Murray, & Schweitzer, 2008).

A strong relationship has been established between predisplacement trauma and postresettlement mental health. Research points to a dose-response association whereby increased exposure to traumatic experiences during displacement leads to greater severity of subsequent posttraumatic symptoms (Smith, Fawzi et al., 1997; Smith, Perrin, Yule, & Rabe-Hesketh, 2001; Steel, Silove, Bird, McGorry, & Mohan, 1999). Over the course of a 3-year postresettlement period, Lie (2002) found that traumatic exposure had a strong impact on psychological functioning. Those refugees who faced specific bodily harm from war, persecution, or torture were more likely to demonstrate chronic distress symptoms. Furthermore, the study showed that for certain refugees, posttraumatic stress disorder (PTSD) symptoms actually increased in severity with time.

A similar study with Bosnian refugees conducted by Mollica, Sarajlic, and Chernoff (2001) tested the relative chronicity of depression symptoms following forced displacement. Results showed that 43% of the sample of refugees originally classified with clinically significant depression remained symptomatic 3 years later. Also, 16% of the refugees who presented originally in the subclinical range demonstrated significant depression symptoms after 3 years. As further evidence of the chronicity of symptoms experienced by refugees, Steel et al. (2005) found that the risk of mental illness was 4 times greater for refugees compared to immigrant controls for up to 10 years after the refugees' initial forced-displacement experience.

Refugee Flight

Flight from the initial conflict zone or site of persecution is typically an extremely dangerous experience for refugees. The escape process can be erratic and may require travel in dangerous conditions across insecure territory (UNHCR, 2007). Even after arriving in a location of relative stability, many refugees face a protracted life in first asylum camps where they struggle with malnutrition, poor sanitation, disease, and lack of medical care. Over time, these refugee camps may also represent a source of trauma and distress in their own right due to risks including crime, rape, and ongoing violence. In a study of the impact of refugee camp internment experiences, Beiser, Turner, and Ganesan (1989) found that those refugees with the harshest internment camp experiences had higher rates of initial postresettlement distress.

Postresettlement Stress

For refugees granted third country asylum, resettlement may bring initial hope and optimism for renewed stability. However, disillusionment and demoralization may occur with the realization of the complexities of establishing a stable life after arrival (Kirmayer et al., 2011). Migration can cause profound psychological distress among even the most prepared individuals and under the best of circumstances (Rumbaut, 1991). Bhugra and Mastrogianni (2004) found that for immigrants in general, migration can be a source of stress resulting in a greater vulnerability to psychological symptoms. For refugees, postresettlement stressors are linked to increased rates of depression and PTSD (Miller et al., 2002; Steel et al., 2005) that may extend years after their initial arrival (Lie, 2002).

Demographics: Age and Sex

Research suggests significant variability in resettlement experiences among refugees based on certain individual difference variables. A positive association of age and depression emerged from previous studies of refugees (Buchwald, Manson, Dinges, Keane, & Kinzie, 1993; Rumbaut, 1989; Westermeyer, 1989). Subsequent meta-analyses confirm these earlier studies showing that younger refugees tend to have better relative mental health outcomes than older refugees (Porter & Haslam, 2005). There is a strong possibility that different ages may yield varying degrees of adaptability to the initial experience of displacement and later to the mental and cultural flexibility required by the resettlement process. Depending on the length of their flight experience, younger refugees may not remember the initial displacement

event and associated trauma. Also, upon resettlement, younger refugees may be more capable of adapting culturally and linguistically and have greater access to acculturative support through school and local friendships than older refugees.

Additionally, female refugees experience, in general, worse mental health outcomes during resettlement than their male counterparts (Majka & Mullan, 1992; Weine et al., 1998). Female refugees may face economic pressure to shift their traditional role within the family and seek employment outside of the home. The stress of this new experience may be compounded by the cultural norms that the shift in roles may challenge. Additionally, many female refugees are resettled after the severe injury, torture, or death of their spouse, forcing them to take on greater responsibility for their family. The new demands placed on women during resettlement often occur within a context of their lower level of education and minimal prior work experience that could otherwise facilitate the negotiation of this transition.

Social Support

Through forced displacement, flight, and resettlement, refugees may experience intimidation, abuse, separation from family, or the death of loved ones. The disruption of family structure that may result from the violence of these traumas can lead to increased levels of psychological distress within refugee families (Ahearn & Athey, 1991; Hobfoll et al., 1991; Weine et al., 2004).

The degree of postresettlement social support is associated with refugee psychological distress levels. The presence of family and support from the broader

ethnic community are important predictors of postresettlement mental health (Schweitzer, Melville, Steel, & Lacherez, 2006). Research indicates that an increase in social support decreases psychological distress in refugees who were tortured (Hooberman, Rosenfeld, Rasmussen, & Keller, 2010). Conversely, social isolation and a loss of community predicted chronic psychological distress in refugees (Connor, Schisler, & Polatajko, 2002; Lie, 2002; Miller, Worthington, Muzurovic, Tipping, & Goldman, 2002; Mollica et al., 2001).

Refugees who lack stable relationships are at a higher risk of developing depression over time compared to those who engender or maintain stable personal relationship bonds (Beiser & Wickrama, 2004; Gorst-Unsworth & Goldenberg, 1998). Being married or arriving in the host country as a member of a family that includes other supportive adults (i.e., parents and adult siblings) has been found to be protective with respect to future depression (Beiser, 1988). Resettlement with other adult family members is thought to be related to the broader social network of cultural familiarity and creates greater economic advantage that may foster resiliency in individuals when compared to refugees arriving in country without this level of preexisting social support (Holz, 1998).

Acculturation

After arriving in the US, refugees who have experienced significant trauma and displacement must then cope with additional stressors associated with rapid adjustment to life in a new cultural context (Dachyshyn, 2006; Kirmayer et al., 2011). The process of learning to cope within a culture for which they have little

familiarity may be experienced as a new threat to postresettlement mental health. This process of adaptation is most commonly referred to as acculturation (Berry, 1980). Acculturation is one of the primary tasks that refugees must negotiate during the resettlement process. Research points to a significant decrease in psychological symptoms for refugees as their acculturation and sense of social stability increases (Weine et al., 1998).

Acquisition of English language skills is an important component of effective adaptation for refugees resettling within the US and a common positive indicator of acculturation. Yet the relationship between English language proficiency at arrival and refugee mental health outcomes is not straightforward. Some research indicates that language acquisition may serve as a protective factor for refugees during the resettlement process (Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). On the other hand, Beiser and Wickrama (2004) found that the initial level of English proficiency for refugees actually raised the risk for psychological distress. This counterintuitive finding may reflect the fact that refugees with higher initial English proficiency tend to also come from higher socio-economic backgrounds and hence may have lost more relative status during the forced displacement and resettlement process. English language ability is clearly an important skill for refugees to master during their adaptation to postresettlement life in the US, but it is also a marker of the complex relationship between personal capacities and the loss of status inherent in the refugee experience.

Perceived Loss of Status

Through the process of forced-displacement and resettlement, refugees are faced with a dramatic loss of identity and subsequent demands to redefine themselves within a new social, cultural, and economic context (Colic-Peisker & Walker, 2003; Kirmayer et al., 2011). For refugees originating from underdeveloped regions or having protracted stays in impoverished refugee camps, resettlement in the US may represent an immediate increase in socio-economic status and access to resources. For other refugee populations originating from comparatively more developed regions or forcibly displaced from higher socio-economic levels, the resettlement experience may represent a significant loss of status.

This loss of status may impact refugees who enter the resettlement process with expectations of maintaining their previous level of socio-economic status. Refugees with a high level of education or prior professional occupational status may face the humiliation of needing to secure low paying menial work within a society that does not recognize their educational credentials or level of expertise (Miller et al., 2002; Yakushko, Backhaus, Watson, Ngaruiya, & Gonzalez, 2008). In their meta-analysis of the refugee mental health literature, Porter and Haslam (2005) found that refugees with higher levels of education and higher predisplacement economic status had worse mental health outcomes.

The Influence of Time

Research indicates that the relative influence of pre and postdisplacement variables shifts over the course of the resettlement process. Length of residence in a

new country has an important influence on the adjustment process for immigrants in general. In terms of specific trends among refugees, some research suggests that mental health follows a curvilinear pattern, whereby refugees experience increasing levels of psychological distress in the early period of resettlement followed by a subsequent decrease in symptoms as stressors are resolved (Bieser, 1988; Tran, Manalo, & Nguyen, 2007).

Weine et al. (1998) reported that over the course of the first year of resettlement, PTSD symptoms in refugees tended to remain elevated but gradually improved. Beiser (1988) observed the persistence of depressive symptoms among refugees at a 2-year follow-up with a peak symptom distress period between 10-12 months postresettlement. Research also demonstrates that, beyond the first year postresettlement, refugees experienced improvements in their mental health the longer they remained in the new country. Longer-term follow up studies by Westermeyer and Wahmanholm (1989) in the US and Beiser and Hou (2001) in Canada demonstrated gradual improvements in mental health for the majority of refugees over the course of a decade postresettlement.

There is general evidence for time in country postresettlement acting as a powerful force for refugee healing and adaptation. The prevalence of mental health problems and the severity of symptoms present at arrival appear to significantly decrease for many refugees over the course of resettlement. However, research has also found that refugees who faced substantial preresettlement trauma may remain at higher risk for developing and maintaining psychological distress symptoms even after a decade in country (Lie, 2002). The variety of findings across studies and

refugee samples suggests that the relationship between psychological distress and time is not necessarily straightforward or clearly mapped onto a common longitudinal refugee experience.

Proposed Study Rationale

As the preceding literature review demonstrates, important foundational research on significant relationships between pre and postresettlement factors and subsequent refugee mental health outcomes exists. However, the majority of refugee-focused research is cross-sectional in design and thereby provides only a single snapshot of the mental health of refugee participants. This approach depicts psychological distress as a status rather than as a process that unfolds over time (Singer & Willett, 2003). Static images do not do justice to the dynamic change experienced by refugees during the resettlement process and may fail to capture important dimensions of the refugee experience that occur in multiple developmental and temporal contexts (Porter & Haslam, 2005).

Postresettlement symptom distress among refugees may represent both the onset of new symptoms and the reactivation of prior trauma (Porter, 2007). An individual refugee's mental health status is likely a complex interplay of multiple ongoing factors. Research approaches that do not account for within-person changes over time may lead to incomplete or even inaccurate conclusions regarding symptom development (Wickrama, Beiser, & Kaspar, 2002). Thus, there is an important need to examine and understand the longitudinal and developmental trajectories underlying refugee mental health.

Although longitudinal research is complex and resource intensive, it is essential to undertake in order to evaluate the trajectories of risk and resilience among refugees as they resettle in the US. When implementation is possible, longitudinal designs can measure and eventually model and predict the dynamic nature of refugee adaptation over time.

Existing longitudinal refugee mental health research has shown inconsistent predictive and epidemiological results. This may be the result of failing to adequately account for underlying or latent populations within the study samples. Refugee longitudinal mental health outcomes are typically grouped together in aggregate form masking the potential heterogeneity of symptom change experienced within and across various refugee populations. By studying refugees as a homogeneous category, potentially important variations in symptom development and expression remain hidden. Furthermore, most existing longitudinal research reflects change through a minimum number of assessment waves measured over a multiple year period, limiting our understanding of intermediate changes in postresettlement mental health (Bieser, 1988; Bieser et al., 2001; Tran, Manalo, & Nguyen, 2007; Westermeyer et al., 1989).

There are few published studies of longitudinal mental health outcomes for refugees over the course of the first postresettlement year. Given the diversity of likely reactions to the stresses associated with resettlement, the absence of longitudinal mental health outcome data during this important period represents a significant gap in our understanding.

Critiques of the existing research base are not simply academic. The failure

to view refugee mental health through a dynamic longitudinal lens means that service providers may lack the necessary awareness or flexibility to respond to the varied developmental courses of mental health problems as they emerge. Given the importance of maximizing the limited resources and services available to refugees during the first postresettlement year, a more dynamic understanding of mental health change trajectories during this period is needed. Furthermore, an evaluation of the relative predictive capacity of the limited information available early on (i.e., within 30 days of arrival) in the resettlement process would serve to tie the research findings to the demands encountered by providers in the field.

Associations between mental health distress trajectories and important pre and early postresettlement variables can aid in identifying, with greater specificity, the expected course of symptom distress. This understanding could subsequently guide targeted prevention and intervention services, contextualize and potentially normalize distress reactions observed by provider and refugee alike, and improve overall refugee adjustment and adaptation during this vital initial year in country. Within the context of the issues listed above, this study proposes to answer the following research questions:

1. *In a sample of refugees resettled in the United States, can individual psychological distress growth curves, assessed during the first year postresettlement, be grouped according to a discrete set of trajectory classes?*

2. *What are the characteristics of the psychological distress trajectory classes extracted from the sample of resettled refugees in this study?*

3. *Can pre and early postresettlement individual difference variables predict future psychological distress trajectory class membership?*

CHAPTER II

METHODS

Setting

Founded in 1933, the International Rescue Committee (IRC) is among the oldest and largest of nonprofit, nonsectarian voluntary organizations providing global emergency relief, protection, advocacy, and resettlement services to refugees and victims of oppression or violent conflict worldwide. IRC is the largest nonsectarian resettlement agency in the US, with 22 offices nationwide assisting refugees throughout the resettlement process and supporting them as they work toward self-sufficiency.

In 1994, the IRC opened a resettlement office in Salt Lake City, Utah where it resettles an average of 500 refugee clients each year. Together with a second resettlement organization in Utah, roughly 1,000 refugees resettle in Utah annually. Refugees arrive in Utah from as far away as Burma, Bhutan, Burundi, Somalia, Iraq, Iran, and Eritrea. IRC staff and volunteers help refugees regain a sense of stability, security, and self-respect, as well as provide food, shelter, medical assistance, school placement, and other essentials to meet their initial resettlement needs. IRC caseworkers orient clients to their new communities, connect them to the

healthcare system, coordinate employment, and enroll them in English literacy and educational programming. The goals of resettlement activities are to connect refugees to mainstream services in the local community, provide culturally and linguistically competent services, and assist refugees to become self-sufficient. Casework services are available during the initial 24 months after arrival in country for refugees resettled through the IRC Salt Lake City resettlement office.

Participants

The proposed study included a sample of adult refugee participants who engaged in the IRC longitudinal mental health screening system between January and December 2011. Participants were refugees over the age of 18 from Iraq, Burma, and Bhutan. A total of 107 participants met criteria for inclusion in the sample. Participant pre and early postresettlement characteristics, including demographics, displacement history, and monthly mental health screening scores, were complied by the Health Program Manager from the existing database systems within IRC. All information was de-identified by the IRC management team prior to data analysis.

Procedures

Starting in January 2011, the IRC in Salt Lake City began administering the Hopkins Symptom Checklist-25 (HSCL-25) on a monthly basis to all newly resettled refugees. This measure was utilized to help track mental health outcomes over the course of the first year postresettlement. At the onset of this mental health tracking

system, IRC chose to focus screening efforts on adults from the 3 largest refugee populations resettling in Utah during 2011 (i.e., Iraqi, Burmese, and Bhutanese refugees).

Each refugee participant in the IRC's longitudinal mental health screening system was provided verbal and written information explaining the purpose of the program by the mental health program coordinator and his or her assigned caseworker. All participating refugees signed a written consent form prior to beginning the screening process. Refugee clients were given the opportunity to opt out of this aspect of the IRC's screening program at any point during the course of their participation. For those refugees that consented to participation, an initial HSCL-25 was administered 30 days after their arrival date in the US and once a month thereafter over the course of their first year in country. This study was granted exempt status by the University of Utah Institutional Review Board due to the retrospective nature of the data analysis process.

The HSCL-25 is a self-report measure and was made available in the languages of the refugee populations included in the program (i.e., Arabic, Nepali, and Burmese). The HSCL-25 typically takes a client 10 minutes to complete in pen and paper form. The instrument consists of 25 items using a Likert-type scale printed on 2 pages. IRC casework staff provided the HSCL-25 form to their clients each month either during regular home visits or when clients visited the resettlement office. Refugee clients completed the HSCL-25 as a self-report measure and returned the hard copies to their caseworker. Monthly HSCL-25 scores per participating refugee client were entered into a central tracking database where this

information was linked to a variety of demographic variables, predisplacement factors, and postresettlement outcomes regularly tracked by the IRC.

Hopkins Symptom Checklist (HSCL-25)

The HSCL-25 was originally designed to assess for changes in anxiety and depression symptoms during psychotherapy (Derogatis et al., 2002) and was substantially validated in the US population as an accurate measure of change in psychological distress over time (Dong-Min, Wampold, & Bolt, 2006; Hollifield et al., 2002; Sandanger et al., 1998; Williams, Pignone, Ramirez, & Perez Stellato, 2002). Relevant for the proposed study, the HSCL-25 is commonly used as a screening tool for detecting psychological distress in nonclinical populations. Sandanger et al. (1999) compared the HSLC-25 to the Composite International Diagnostic Interview (CIDI) and found that the two measures behaved similarly as a distress measure in a nonclinical sample. Winokur, Winokur, Rickels, and Cox (1984) found that when the HSCL-25 was used as a diagnostic proxy for depression and anxiety, the results were consistent with community epidemiological data for the general US population.

The HSCL-25 consists of 25 items divided into two subscales: anxiety (10 items) and depression (15 items). The scores for these two subscales can be interpreted independently but are highly correlated and are most often evaluated as a single composite subjective distress score (Mollica et al., 1987). Individual items are rated on a 4-point Likert-type scale ranging from 1 to 4, where 1 = not at all and 4 = extremely affected. Higher scores on the HSCL-25 reflect increased levels of subjective distress. While the HSCL-25 is not considered a diagnostic tool, a variety

of studies have suggested that a total score greater than 1.75 is indicative of clinically significant distress. Mean cumulative symptom scores higher than 1.75 for each subscale were found to be valid in predicting clinical diagnoses of anxiety and affective disorders (Mollica et al., 1987).

Use of the HSCL-25 in Diverse Populations

The HSCL-25 was translated into multiple languages by the Harvard Program in Refugee Trauma and has been used successfully as a screening instrument for major depression and as a measure of symptom improvement with diverse cultural groups (Bolton, Neugebauer, & Ndogoni, 2002; Kelijn, Hoven, & Rodenburg, 2001; Mollica et al., 1987). The HSCL-25 is widely used to estimate the prevalence of psychological distress among refugees and asylum seekers (Gerritsen et al., 2006) and as an outcome measure for refugees resettled abroad (Hinton et al., 2004). The measure demonstrated good reliability and validity across a variety of refugee samples (Hollifield et al., 2002).

The HSCL-25 was validated against clinical diagnosis for depression and anxiety and has shown high internal consistency and reliability in studies of Nepali, Russian, Arabic, Farsi, Bosnian, and Croatian-speaking patients (Kleijn et al., 2001; Mollica et al., 1999; Shrestha et al., 1998; Smith Fawzi et al., 1997; Wagner et al., 1998; Ware et al., 1998). The HSCL-25 was shown to be culturally sensitive with a variety of sample populations around the world and sufficient validity and reliability were documented (Fox & Tang, 2000). In a study of symptom distress and social dysfunction among a variety of traumatized refugees groups, HSCL-25 self-report

scores coincided with clinician evaluations using the Global Assessment of Functioning (GAF) rating scale. The study supported the HCSL-25 as a measure especially suited to detect symptoms of anxiety and depression in a variety of refugee populations (Lavik, Laake, Hauff, & Solberg, 1999). Finally, Mollica et al. (2007) found the HSCL-25 to be a good measure of changes in psychological distress over time when applied to a longitudinal sample of Bosnian refugees.

Arabic and Nepali Versions of the HSCL-25

For the purpose of this study, the IRC secured translated versions of the HSCL-25 previously used in research with Iraqi refugees in Jordan (UNICEF, 2009), and Bhutanese refugees in Nepal (Thapa & Hauff, 2005). Prior to administering the Arabic and Nepali versions of the HSCL-25, bilingual resettlement staff working for the IRC, who themselves were previously resettled in Utah as refugees, reviewed each version for linguistic clarity and cultural relevance. Both versions were determined to be easily understandable and culturally valid by the staff members. Initial pilot testing with refugee clients demonstrated a wide variety of response patterns, relative ease of administration, and minimal time commitment for refugees and resettlement caseworkers.

Burmese Version of the HSCL-25

Unlike the Nepali and Iraqi versions, there was no prior version of the HSCL-25 available for use or adaptation in the Burmese language. Since the Burmese represented an important subset of the total refugee population resettled in Utah

during 2011, IRC chose to develop a Burmese cultural and linguistic adaptation of the HSCL-25.

As the translation of an instrument requires more than simple semantic equivalence, the cross-cultural conversion of the HSCL-25 involved several important steps (Mollica et al., 2007; Mollica, Wyshak, Lavelle, Gorst-Unsworth, & Goldenberg, 1998). In line with the adaptation recommendations made by Mollica et al. (1998), the instrument was first translated from English into Burmese by a bilingual IRC caseworker. The translated version was then back translated to English by a second bilingual IRC caseworker who was prevented from viewing the original English version during the translation process. Next, both bilingual caseworkers and additional IRC staff evaluated the differences in the original and back-translated English versions, paying close attention to the linguistic and cultural conceptualizations related to symptom distress. A draft version was negotiated within a group of IRC staff and the two bilingual caseworkers before piloting it in the Burmese refugee community and making final adjustments.

Pre and Early Postresettlement Study Variables

Information pertaining to the following variables was collected from the formal paperwork and intake interviews by IRC staff within the first month of a refugee arriving in Utah: (1) Sex, (2) Country of Origin, (3) Preresettlement Work Experience, (4) Education Level, (5) English Skill Level, (6) History of Violence, (7) History of Torture, (8) Resettled as a Single Refugee or With Accompanying Adults,

(9) Family Reunification, (10) Resettlement Self-Efficacy, (11) Month 1 HSCL-25 Screening, and (12) Resettlement Age.

Education level attained prior to resettlement was based upon participant self-report during structured intake interviews conducted within 10 days of arrival by IRC employment counselors. Education was measured based on the level of formal education that each refugee attained prior to resettlement. Specifically, education consisted of a 4-point scale with 1 = none, 2 = primary, 3 = high school, 4 = college plus. English proficiency level was recorded during the same structured interviews based upon assessments of reading, writing, speech and listening comprehension. English skill level was scored on a 3 point scale with 1 = none, 2 = limited, and 3 = sufficient.

With regards to determining a history of violence or torture, all refugee adults were asked the same question during their initial health screening appointment within 30 days of arrival in country. This question was posed by one of two physicians contracted to provide initial health assessments and referrals within the 30-day period. The physicians used the following standardized text to introduce the topic of violence and torture:

> In this clinic we see many patients who have been forced to leave their countries because of violence or threats to the health and safety of patients and families. I am going to ask you a question about this. Were you ever the victim of violence or torture in your former country? (Eisenman, 2007)

If the refugee answers "yes" to this question and indicates that he/she is comfortable with providing further information, the physician will attempt to determine what type of violence the individual experienced and whether or not

these experiences fit the criteria for torture. This is accomplished by following the specific definition for torture outlined by the United Nations:

> Any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity.(UN General Assembly, 1984)

Within 30 days of arrival, each refugee also completed a needs assessment associated with common resettlement themes (e.g., health, employment, education, housing, family, and community). Within the needs assessment, resettlement agency caseworkers asked refugee clients to describe how they expected their adjustment process to unfold during the initial postresettlement year. They were then asked to rate their perceived ability to adapt to their new life in the US as low, medium, or high. For the purpose of this study, responses to this component of the assessment were conceptualized as the individual's relative degree of resettlement self-efficacy.

Data Analysis Strategy

Person-Centered Analyses

This study approached refugee mental health outcomes from the perspective of person-centered analyses. The focus of person-centered analyses is on the relationships among individuals, and the goal is to classify individuals into distinct groups or categories based on individual response patterns so that individuals

within a group are more similar than individuals between groups. This is in contrast to variable-centered research where the goal is to identify significant predictors of outcomes and describe how dependent and independent variables are related.

Growth analyses typically estimate a single growth trajectory for all participants by modeling the average change in a given sample. The average trajectory contains an average intercept and slope for the sample. Individual differences are represented in this approach by the degree of variability around the average intercept and slope. This approach to growth modeling is useful when evaluating outcome variables that change in the same direction with time and when the degree of change rather than the direction of change is of interest. For psychological phenomenon that do not change in the same direction with time, as is expected in the mental health outcomes for a diverse group of refugees, standard growth models may inaccurately reflect the variety of change trajectories present within a given sample. A single averaged growth trajectory may mask important individual differences and lead to erroneous model conclusions (Jung & Wickrama 2008).

Standard growth modeling approaches assume that individuals come from a single population and that a single growth trajectory can adequately approximate an entire population. Also, it is assumed that covariates that affect growth factors influence each individual in the same way. Yet results from research and theory point to the potential heterogeneity of growth trajectories within the larger population of resettled refugees. Describing an entire population using a single

growth trajectory estimate may oversimplify the complex growth patterns that reflect continuity and change among members of latent groups.

Growth Mixture Modeling (GMM)

In comparison to conventional growth modeling approaches, Growth Mixture Modeling (GMM) relaxes the assumption that individuals are drawn from a population with common parameters and allows for differences in growth trajectories across unobserved or latent subpopulations. This is accomplished using latent trajectory classes, which allow for different groups of individual growth trajectories to vary around different means. The results produce separate growth models for each latent class, each with unique estimates of variances and covariate influences (Muthen & Asparaouhov, 2011). GMM provides a methodology for identifying the number of latent classes and for predicting latent class membership. GMM in this study was estimated with the Mplus Version 7 software package (Muthen & Muthen, 2012).

3 steps of analysis were conducted. First, a baseline growth model for the entire sample was computed to find the best single-group representation of change. Second, the number of distinct subgroups of clients with similar shapes of change via GMM was identified. Third, comparison of individual difference variables as predictors of trajectory class membership was abstracted.

The GMM approach was employed since it allows for the identification of unobserved groups of individuals with shared shapes of change over time on a common outcome variable (Muthen, 2004; Muthen & Muthen, 2000). GMM permits

the identification of unobserved subpopulations of individuals that vary around qualitatively different mean growth curves that are shared within homogenous latent classes. GMM then both estimates the mean growth curve for each latent class and captures individual variation around these growth curves by estimating the growth factor variances for each class (Muthen, 2004; Muthen et al., 2000). GMM then estimates each individual's probability of membership in each of the latent classes, assigning membership to the most probable class (Colder, Campbell, Ruel, Richardson, & Flay, 2002). Lastly, bivariate analyses and multinomial logistic regression were employed to identify significant pre and early postresettlement predictors of latent class membership.

CHAPTER III

RESULTS

The purpose of this study was to evaluate psychological distress trajectories for a sample of refugees during their initial year postresettlement. This process entailed balancing the relative heterogeneity of refugee psychological experiences with the possibility that certain patterns of experience may emerge over time from the diverse sample. This study therefore sought to extract a set of trajectory classes from a sample of longitudinal refugee psychological distress data, understand the characteristics of each trajectory class, and finally to predict membership in each trajectory class based upon a set of pre and early postresettlement variables. The following section outlines sample descriptive statistics, as well as provides detailed tables, figures, and results associated with each of the statistical procedures employed to answer the 3 research questions.

Table 1 highlights the frequencies and percentages of selected variables across the total refugee sample (N=107). The sample included relatively even proportions of male (51.4%) and female (48.6%) refugees. This study sample was composed of adult refugees resettled in Utah during 2011 that were displaced from 3 specific countries of origin: Iraq (15.9%), Burma (33.6%), and Bhutan (49.5%).

Table 1: Descriptive Statistics for Total Refugee Sample (*N*=107)

Variable		*%*	*(n)*
Sex	Male	51.4%	(*n*=55)
	Female	48.6%	(*n*=52)
Country	Iraq	15.9%	(*n*=17)
	Burma	33.6%	(*n*=36)
	Bhutan	50.5%	(*n*=54)
Previous Work	None	34.6%	(*n*=37)
	Unskilled	36.4%	(*n*=39)
	Skilled	29.0%	(*n*=31)
Education Level	None	23.4%	(*n*=25)
	Primary	15.9%	(*n*=17)
	HS	45.8%	(*n*=49)
	College+	15.0%	(*n*=16)
English Level	None	42.1%	(*n*=45)
	Limited	21.5%	(*n*=23)
	Sufficient	36.4%	(*n*=39)
Violence	No	80.4%	(*n*=86)
	Yes	19.6%	(*n*=21)
Torture	No	86.0%	(*n*=92)
	Yes	14.0%	(*n*=15)
Adults	Single	15.0%	(*n*=16)
	Multiple	85.0%	(*n*=91)
Family Reunification	No	26.2%	(*n*=28)
	Yes	73.8%	(*n*=79)
Resettlement Self-Efficacy	Low	40.2%	(*n*=43)
	Medium	45.8%	(*n*=49)
	High	14.0%	(*n*=15)
Month 1 HSCL-25	Negative Screen	66.4%	(*n*=71)
	Positive Screen	33.6%	(*n*=36)

Of the total sample, 34.6% of refugee participants reported no paid work experience prior to resettlement and 36.4% indicated unskilled paid manual labor prior to resettlement. The remaining, 29.0% of refugee participants reported employment in at least one specialized or professional position prior to resettlement.

At the time of resettlement, 23.4% of refugee participants reported no formal education and 15.9% reported completing only primary schooling. A total of 45.8% of the sample indicated that they earned the equivalent of a high school degree while 15.0% reported earning a college or advanced postbaccalaureate education prior to resettlement.

Within 10 days of arrival in Utah, all participating refugees completed an English language screening test that included standardized speaking, reading, listening, and writing tasks. At the time of the language screening, 42.1% of refugee participants demonstrated no English language ability and 21.5% demonstrated only a limited proficiency. The remaining 36.4% demonstrated language skills considered sufficient for basic functional English communication.

Of the total sample, 19.6% of refugee participants reported experiencing violence during their forced displacement. It is important to note that for the purpose of this study, these experiences did not meet the criteria for torture as defined by the UN and described above and therefore, this variable is considered to reflect violence exclusive of torture. A total of 14% of participants reported being tortured prior to or during their forced displacement. For the purpose of this study,

the torture designation was assigned only to those refugees who endorsed the torture-specific item on their initial health screening.

It is important to note that for clarity in the analyses, if a refugee indicated a history of torture, this excluded them from also being assigned the violence designation. That is, endorsing violence can be understood to mean violence without torture, while endorsing torture is understood to include both violence and torture within the single variable. For the sake of descriptive simplicity, from here forward, the variable "violence exclusive of torture" will be referred to as violence.

Fourteen percent of refugee participants resettled without accompanying adult family members in contrast to 86% of the total sample who arrived with one or more additional refugee adults. A majority of the study participants (73.8%) reported that resettlement represented reunification with family members who resettled in Utah in prior years. By contrast, 26.2% indicated that they arrived as the first wave of family members to resettle in the state.

When refugee participants were asked to rate their perceived ability to adapt successfully to postresettlement challenges (i.e., resettlement self-efficacy), 40.2% of participants reported a low level of resettlement self-efficacy, 45.8% of participants reported a medium level of resettlement self-efficacy, and the remaining 14.0 % reported a high level of resettlement self-efficacy.

At the conclusion of the first month postarrival, each participating refugee completed the initial HSCL-25 mental health screening. In addition to serving as the continuous outcome variable for the 12-month distress trajectories, the initial month screening was dichotomized to identify those refugees who were either

positive or negative for significant psychological distress at month 1. From the total study sample, 66.4% of refugee participants screened negative for significant psychological distress on their first HSCL-25. By comparison, 33.6% of refugee participants screened positive on their first HSCL-25, indicating that they experienced significant psychological distress during their first month in the United States.

Table 2 summarizes descriptive statistics reflecting the distribution and central tendency of refugee age at the time of resettlement. The mean age at resettlement within the sample was 34.82 years, with a standard deviation of nearly 14 years. The youngest refugee study participants resettled at age 18 and the oldest arrived at age 77.

The following section describes results of analyses employed to answer each of the 3 research questions. The format for this section includes a restatement of each research question followed by a description of the associated statistical analyses and results.

Table 2: Resettlement Age: Descriptive Statistics

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Resettlement Age	34.82	13.99	18	77

Research Question 1

In a sample of refugees resettled in the United States, can individual psychological distress growth curves, assessed during the first year postresettlement, be grouped according to a discrete set of trajectory classes?

Table 3 summarizes mental health scores associated with the monthly distress levels assessed across the study sample during the first 12 months postresettlement. Distress was assessed monthly using the Hopkins Symptom Checklist (HSCL-25), which provided a score ranging between 1.00 and 4.00 with higher scores reflecting greater levels of distress. Figure 1 provides a graphical representation of the data in Table 3. The graphic shows the mean distress levels for months 1 through 12.

When viewing the mean 12-month distress curve in Figure 1 or associated values from Table 3, it is clear that as a whole, the sample of refugees experienced relatively low levels of psychological distress during their first postresettlement year. However, the mean growth trajectory may mask potential variability or heterogeneity of postresettlement psychological distress.

Table 3: 12-Month Distress Scores (HSCL-25)

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Month 1	1.63	.64	1.00	3.92
Month 2	1.61	.70	1.00	3.88
Month 3	1.63	.69	1.00	3.88
Month 4	1.61	.69	1.00	3.84
Month 5	1.63	.73	1.00	3.84
Month 6	1.60	.77	1.00	3.96
Month 7	1.62	.81	1.00	3.96
Month 8	1.67	.80	1.00	4.00
Month 9	1.69	.82	1.00	4.00
Month 10	1.64	.77	1.00	4.00
Month 11	1.63	.78	1.00	4.00
Month 12	1.65	.80	1.00	4.00

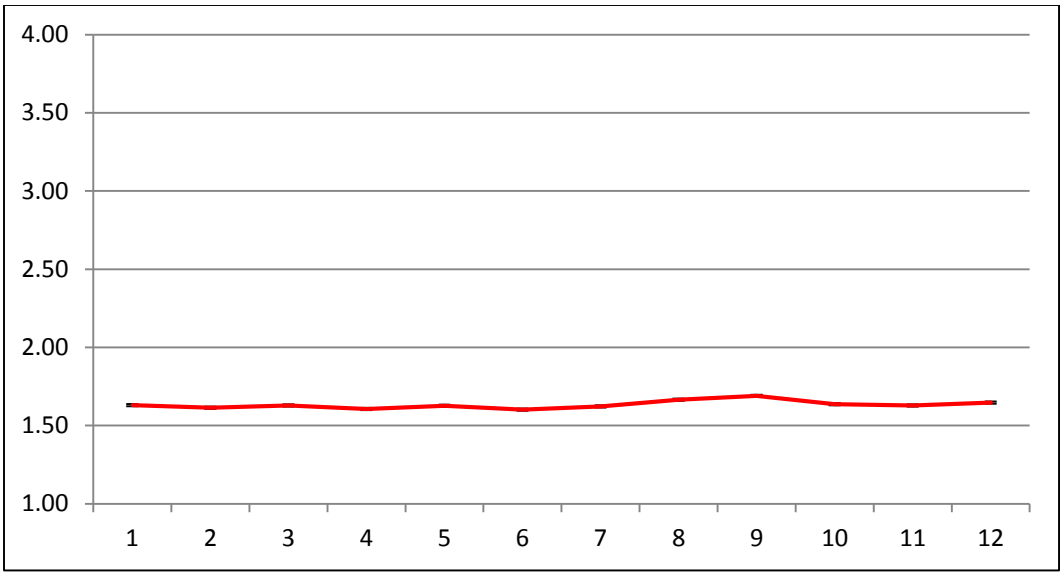

Figure 1. 12-Month Psychological Distress Scores (HSCL-25)

Figure 2 summarizes the distribution of Month 1 HSCL-25 distress scores across the refugee sample. The histogram shows that the majority of the refugee sample demonstrated a low level of distress during their initial month postarrival; however, it also shows that there are clusters of individual refugees that arrive in country at varying degrees of increased distress. This diversity of initial distress level points to the importance of evaluating the underlying heterogeneity of the study sample and suggests that there may be a number of classes of refugee participants who are not well represented by the aggregate growth curve.

As shown in Figure 3, overlaying the summary curve onto the sample raw data demonstrates the potential risk of aggregate analysis. The graphical depiction highlights the substantial variability in intercept, slope, and development across the sample that is poorly represented by a single aggregate curve. The summary mean trajectory line overestimates distress for a large proportion of the sample, underestimates distress for a substantial minority of the sample, and reflects a

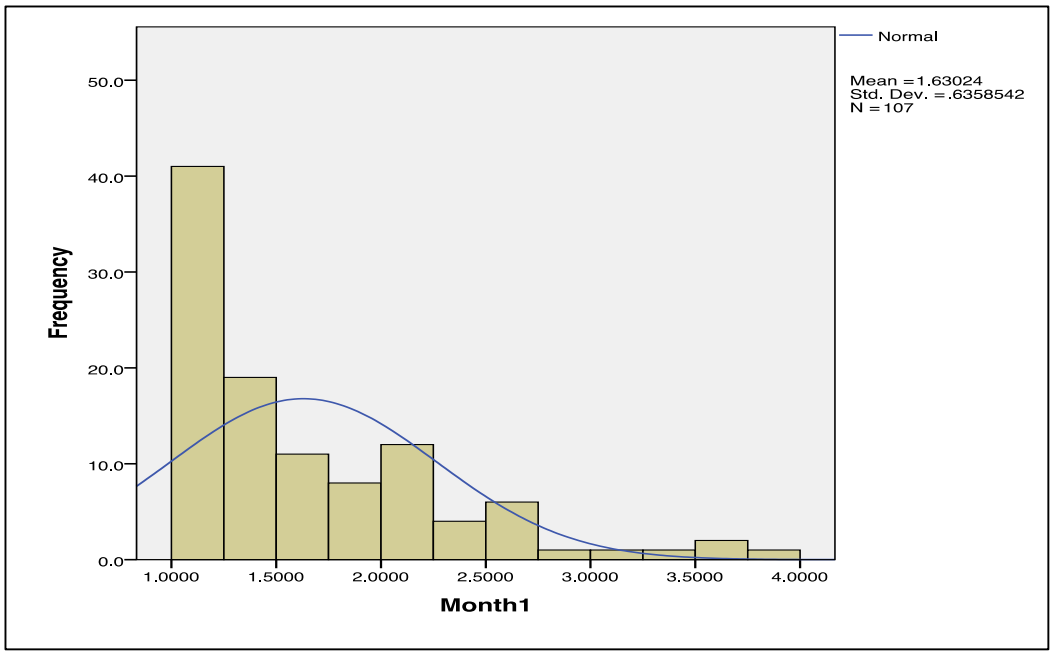

Figure 2. Month 1 Distress Histogram for Study Sample

simplification of the shape of change in psychological distress for many of the refugee participants. The level of heterogeneity demonstrated in Figures 2 and 3 suggests that a more nuanced understanding of the variety of distress profiles experienced in the refugee sample is needed.

As an alternative to developing an aggregate or summary curve for this diverse group of resettled refugees, a series of growth mixture models (GMMs) and associated fit statistics were extracted from the total study sample using *Mplus* version 7.0. GMM is an approach that relaxes the assumptions that the sample is drawn from a single population and allows for differences in growth parameters across unobserved subpopulations. As noted above, latent trajectory classes extracted through the GMM process allow for different groups of individual growth trajectories to vary around targeted means and identified growth factors. This process allows for the identification of separate growth trajectories for each latent

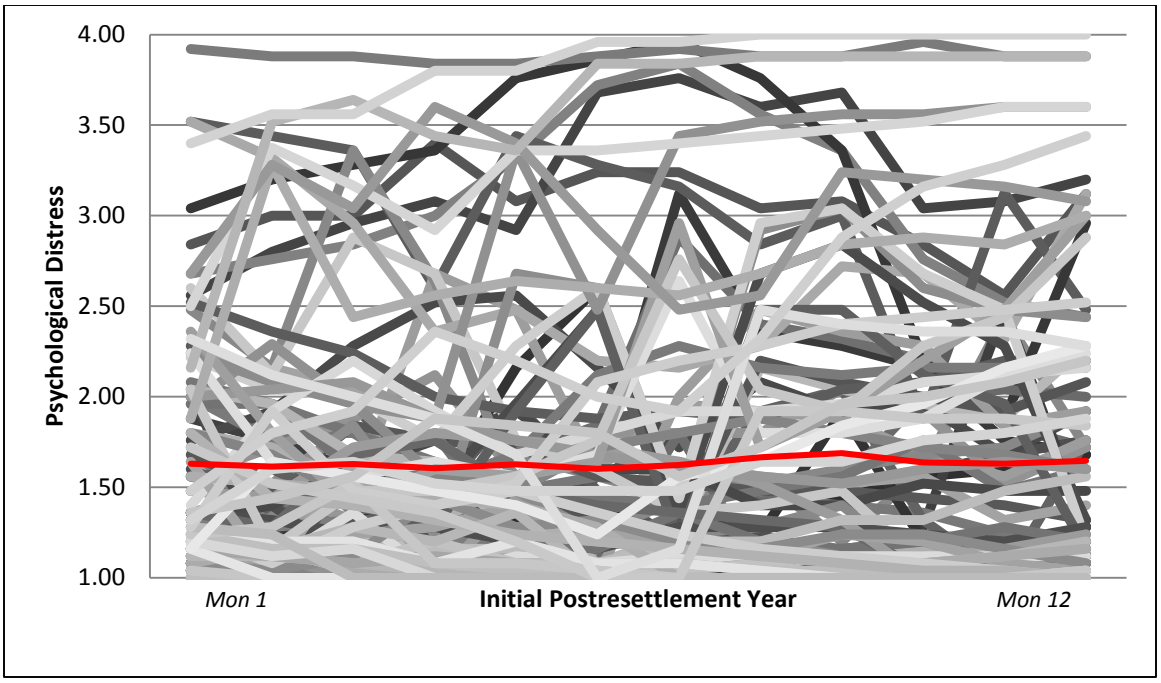

Figure 3. Individual Distress Curves with Mean Trajectory Overlay

class (Muthen et al., 2006).

Trajectory class extraction follows an iterative process guided by fit indices, relative class size, and interpretability. The sample size adjusted Bayesian Information Criterion (Adj BIC), Entropy, and the percentages of class membership for 1 through 10 class growth mixture models are displayed in Table 4.

The Adj BIC index is used for comparing several plausible models where the lowest value indicates the best fitting number of classes. A summary measure of the classification is given by the entropy value. Entropy values range from 0 to 1, with values close to 1 indicating greater clarity in classification. Findings in the modeling research literature indicate that entropy figures greater than .80 are generally considered sufficient (Nylund, Asparouhov, & Muthén, 2007). This suggests that entropy may not be particularly useful in determining the ideal number of classes in

Table 4. Fit Indices and Class Sizes for Estimated Growth Mixture Models

Num. Classes	Adj. BIC	Entropy	C1%	C2%	C3%	C4%	C5%	C6%	C7%	C8%	C9%	C10%
1	637.814	---	100									
2	630.843	0.970	93	7								
3	531.362	0.887	47	39	15							
4	481.822	0.911	41	38	13	8						
5	439.222	0.914	40	27	14	10	10					
6	409.634	0.932	40	28	14	10	7	3				
7	398.606	0.935	40	26	14	10	7	3	1			
8	396.368	0.942	40	26	14	9	8	3	1	1		
9	392.789	0.948	40	25	13	8	5	3	3	3	1	
10	390.808	0.924	40	20	11	7	7	5	3	3	3	1

the present study given that none of the class models listed in Table 4 demonstrate entropy figures less than .80.

In addition to these formal criteria, class size and interpretability are also considered in model selection. Specifically, models with a smaller number of larger classes are preferred over models that include a higher number of classes with a lower percentage of class membership. In the present study, a latent class that included only a small proportion (<10%) of participants may have limited utility when considering the application or generalizability of the results to the broader system of refugee resettlement.

In a strict sense, the Adj BIC results shown in Table 4 suggest a continual improvement in each subsequent model up through the 10-class framework. On the other hand, when a scree plot is drawn (see Figure 4) demonstrating the relative decrease in the Adj BIC statistic, it is apparent that the rate improvement in fit slows down between a 5- and a 6-class models, and almost completely flattens after the 7th class is extracted. This approach to the data suggests that there may be little added utility to looking beyond the 6-class GMM for this sample.

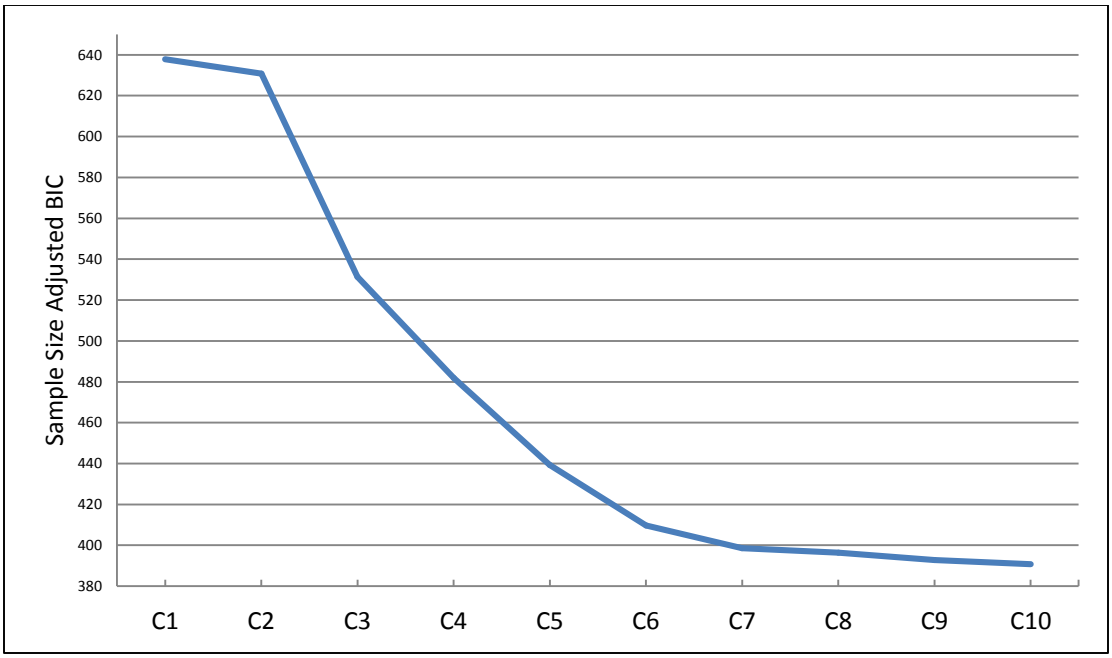

Figure 4. Adjusted BIC Scree Plot for Classes 1 through 10

While Adj BIC and Entropy provide guidance in the selection of the ideal number of classes, before arriving at a solution, these fit statistics need to also be balanced with interpretability. Specifically, the relative distribution of participants across classes and the meaningful clinical and practical distinctions between classes help to contextualize the otherwise purely statistical criteria.

Comparing a 5- to a 6-class model, the distribution of refugees across classes becomes a concern given the relatively small overall sample size. In the 5-class model, the smallest class is made up of 10% of the sample. However, when a 6th class is extracted, this 10% is split between 7% and 3%. Here a balance between the guidance of the fit indices and the utility of modeling a class with less than 10% of the sample must be considered.

Upon closer inspection, the new class represents a subset of chronically

distressed refugees who demonstrate variations in trajectory but nonetheless remain at a high level of distress throughout the initial 12 postresettlement months. This suggests that there may not be a meaningful clinical distinction between the 3% or 7% classes in the 6-class model and the original 10% chronically distressed class extracted from the 5-class model. Given these various considerations, a 5-class quadratic model (see Figure 5) was selected as the best balance of fit indices, parsimony, and interpretability. Individual refugee participants were then classified into 1 of the 5 latent classes according to the highest probability of membership calculated by Mplus.

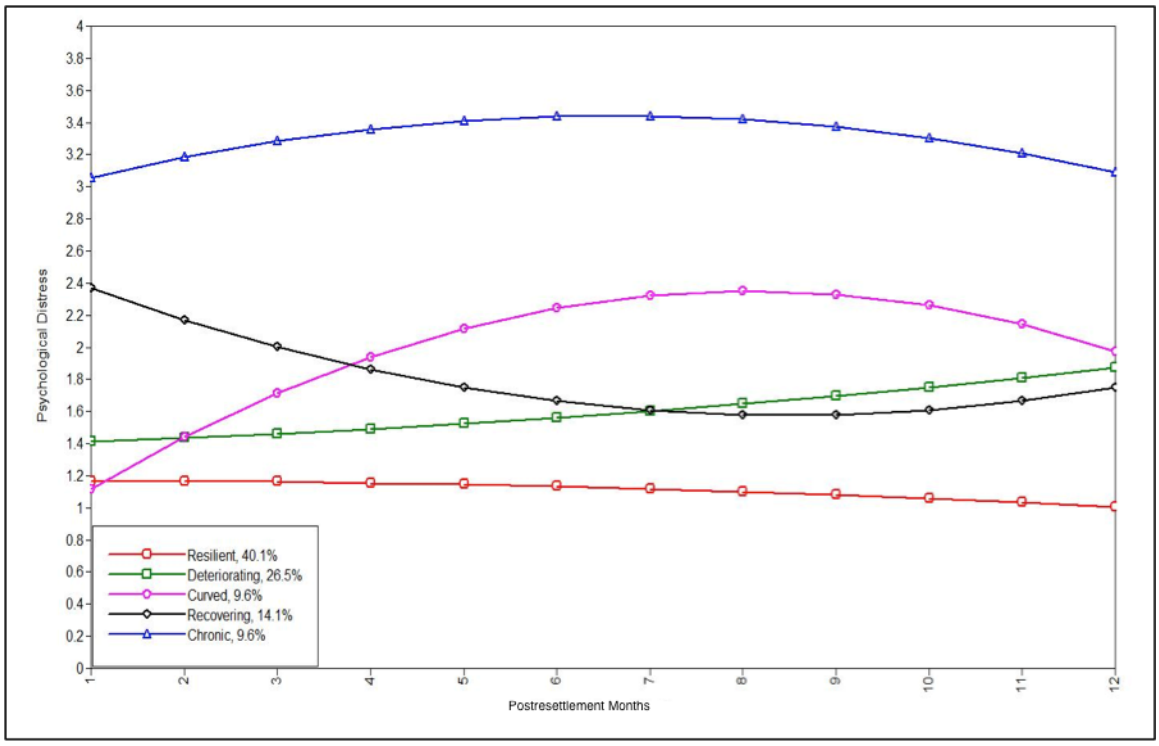

Figure 5. 5-Class Growth Mixture Model

Research Question 2

What are the characteristics of the psychological distress trajectory classes extracted from the sample of resettled refugees in this study?

The goal of this component of the analysis was to describe the variation in characteristics of each of the 5 distress classes extracted from the sample of resettled refugees. For the purposes of interpretation, each trajectory class was assigned a label that described the severity and shape of the distress curve indicative of the changes that occurred across the 12-month postresettlement time interval. The 5-class model is depicted graphically in Figure 5. The 5 classes were labeled Resilient, Deteriorating, Curved, Recovering, and Chronic. Table 5 summarizes the descriptive statistics for each of the 5 trajectory classes.

Figures 6 through 10 individually depict each of the 5 trajectory classes along with the associated raw data trajectories per classified refugee. The Resilient Trajectory Class shown in Figure 6 makes up 40.1% of the study sample with a mean intercept of 1.17, mean slope of 0.00, and a mean quadratic growth factor of -0.14. During the Mplus model extraction process, the slope of the Resilient class was set to zero as a means of clearly delineating the majority of individuals with

Table 5: Descriptive Statistics for the 5-Class Growth Mixture Model

Class	*%*	*(n)*	*M Intercept*	*M Slope*	*M Quad*
Resilient	40.1%	(*n*=44)	**1.17***	0.00	**-0.14***
Deteriorating	26.5%	(*n*=28)	**1.41***	0.19	0.20
Curved	9.6%	(*n*=10)	**1.12***	**3.48***	**-2.46***
Recovering	14.1%	(*n*=15)	**2.37***	**-2.11***	**1.41***
Chronic	9.6%	(*n*=10)	**3.06***	**1.37***	**-1.22***

p < .01

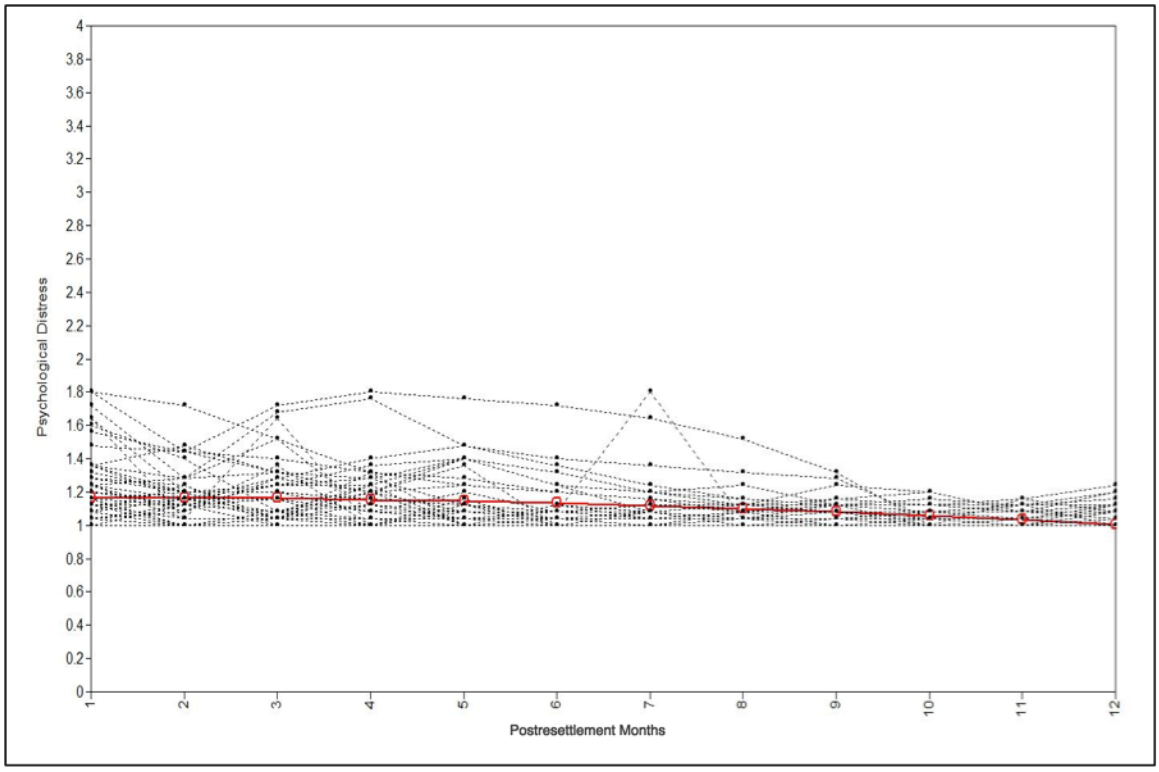

Figure 6. Resilient Trajectory Class

persistently low levels of distress from those that may start low but demonstrate an increase in distress over time. As Figure 6 shows, the Resilient Trajectory Class is made up mostly of individuals with low distress levels throughout the resettlement year.

Figure 7 is a representation of the Deteriorating Distress Trajectory Class. This class was made up of 26.5% of the study sample. The class had a mean intercept of 1.41, a mean slope of 0.19, and a mean quadratic growth factor of 0.20. This class shows a subset of refugees that started at a relatively low level of distress but slowly increased in their distress over the course of the initial postresettlement year.

Figure 8 represents the Curved Distress Trajectory Class. This class made up

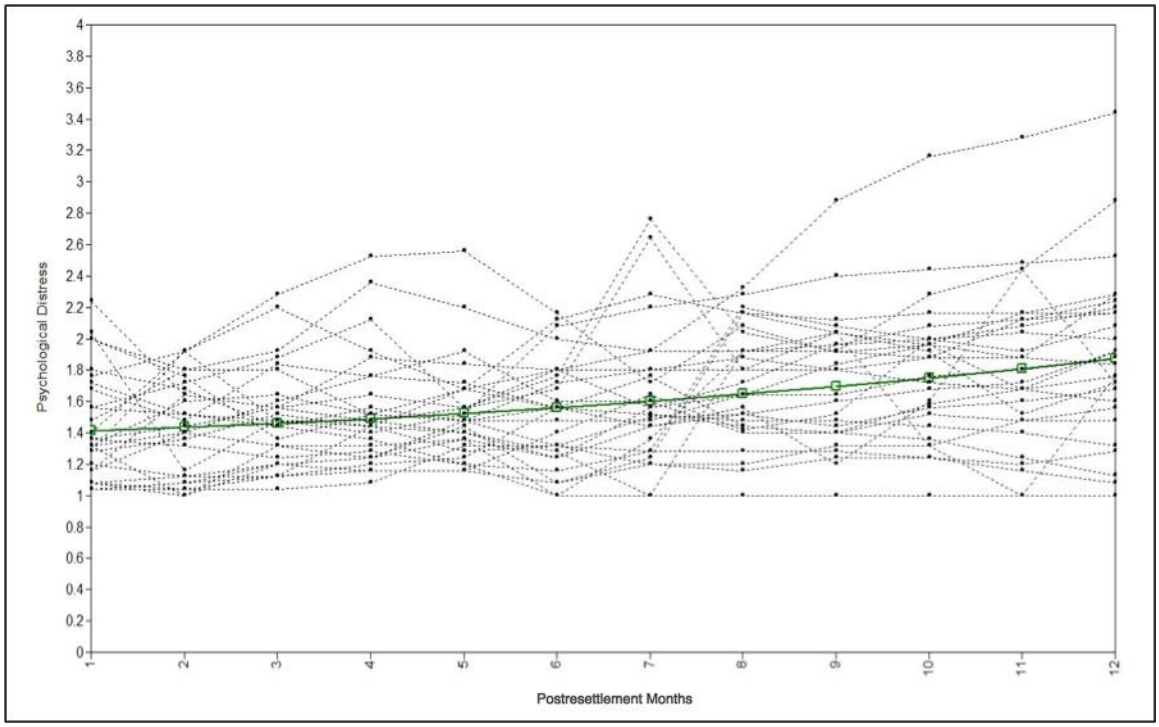

Figure 7. Deteriorating Distress Trajectory Class

9.6% of the study sample. The mean intercept was 1.12, the mean slope was 3.48, and the mean quadratic growth factor was -2.46. Members of this class demonstrated a tendency to start at a relatively low level of distress, but experienced a rapid increase in distress during the first half of the resettlement year. For the majority of the refugees in this class, there was a subsequent reduction in their distress levels during the later portion of the year.

Figure 9 represents the Recovering Distress Trajectory Class. This class is made up of 14.1% of the study sample with a mean intercept of 2.37, mean slope of -2.11, and the mean quadratic growth factor of 1.41. This class tended to demonstrate a higher initial distress level with a subsequent reduction in distress over time.

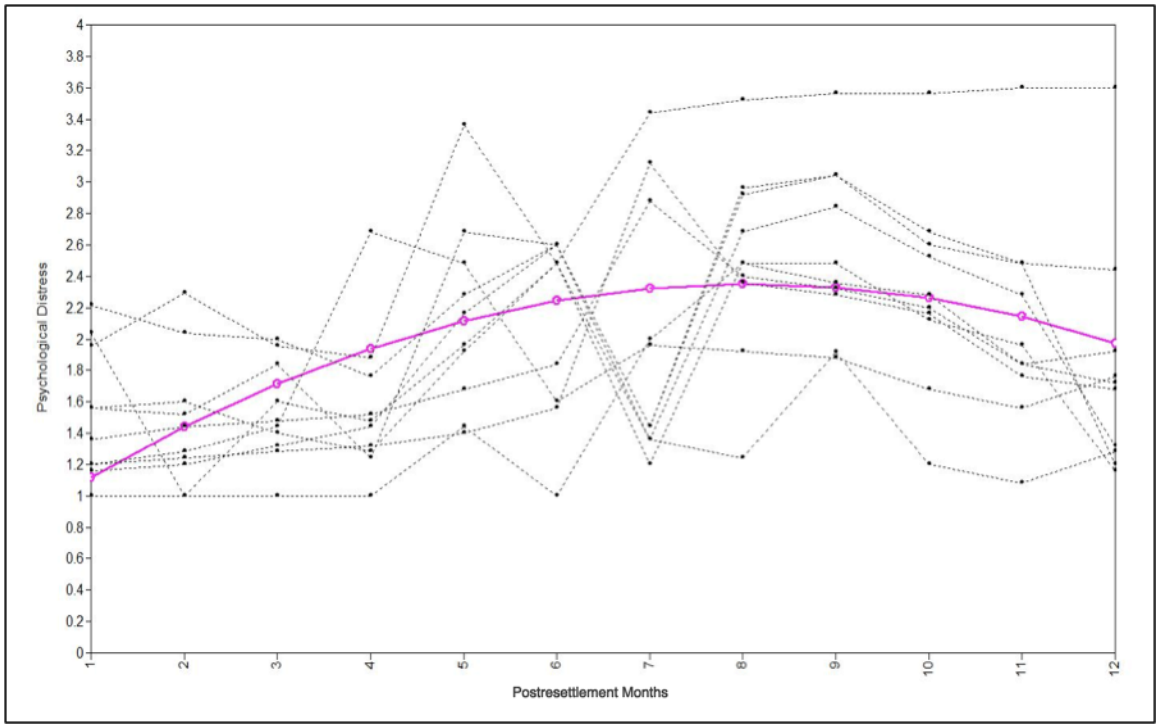

Figure 8. Curved Distress Trajectory Class

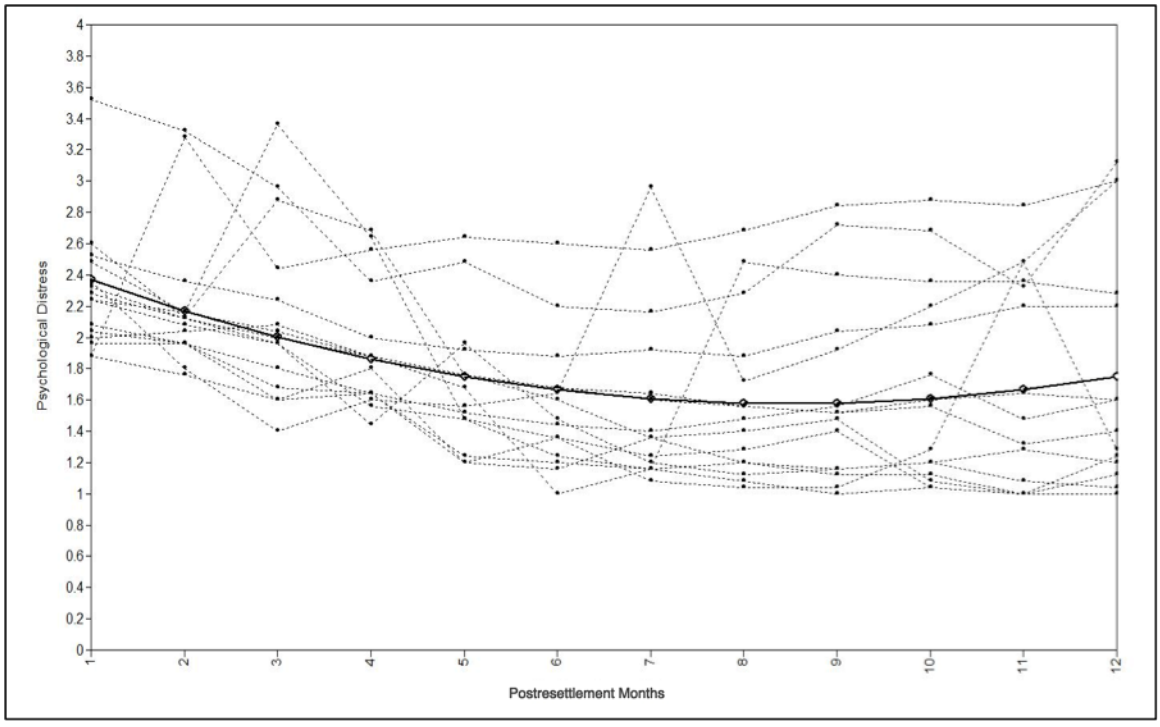

Figure 9. Recovering Distress Trajectory Class

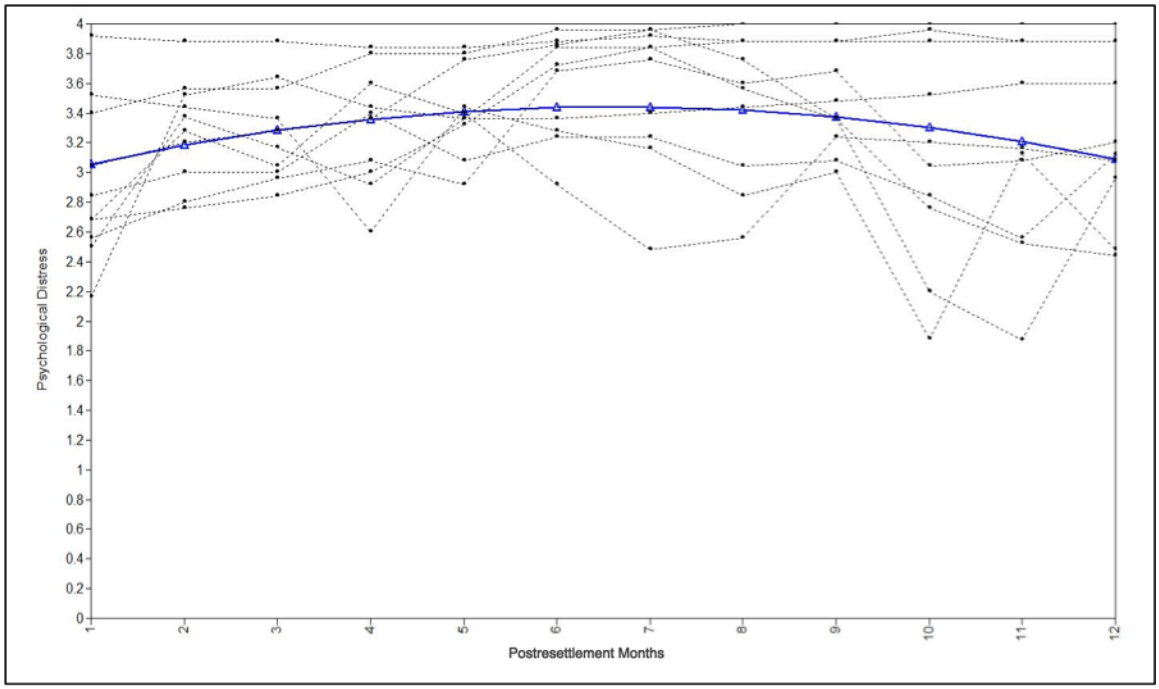

Figure 10. Chronic Distress Trajectory Class

Figure 10 represents the Chronic Distress Trajectory Class. This class is made up of 9.6% of the study sample. The mean intercept was 3.06, the mean slope was 1.37, and the mean quadratic growth factor was -1.22. Refugees in this class demonstrated high levels of initial distress as well as the tendency to remain at these elevated levels throughout the course of the initial postresettlement year.

Research Question 3

Can pre- and early postresettlement individual difference variables predict future psychological distress trajectory class membership?

To address research question 3, a series of cross tabulation analyses and a mean difference test were conducted to determine whether significant associations were present between the study variables and each of the 5 psychological distress

trajectory classes. These analyses were primarily used to derive a list of significant predictors of class membership, which were then entered as independent variables in the planned multinomial logistic regression analysis.

With respect to the association between sex and trajectory class (Table 6), analyses indicated that no significant relationship was present between these two measures; χ^2 (4) = 5.421, p = .254, Fisher's exact test p = .259, Cramer's V = .225, p = .254.

In order to determine whether a significant association existed between country of origin and trajectory class (Table 7), a chi-square analysis was conducted, along with Fisher's exact test and Cramer's V. These analyses found a significant association between country of origin and trajectory class; χ^2 (8) = 57.788, p < .001, Fisher's exact test p < .001, Cramer's V = .520, p < .001.

Among refugees in the Resilient class, 0.0% were Iraqi. Among refugees in the Deteriorating class, 10.7% were Iraqi, while among those in the Curved class, 20.0% were from Iraq. Next, among those in the Recovering class, 20.0% were from Iraq. Finally, among those individuals in the chronic class, 90.0% were Iraqi.

Table 6: Cross Tabulation Table: Class and Sex

Sex		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Female	Count	21	15	2	7	7	52
	% within Female	40.4%	28.8%	3.8%	13.5%	13.5%	100.0%
	% within Class	47.7%	53.6%	20.0%	46.7%	70.0%	48.6%
	% of Total	19.6%	14.0%	1.9%	6.5%	6.5%	48.6%
Male	Count	23	13	8	8	3	55
	% within Male	41.8%	23.6%	14.5%	14.5%	5.5%	100.0%
	% within Class	52.3%	46.4%	80.0%	53.3%	30.0%	51.4%
	% of Total	27.5%	12.1%	7.5%	7.5%	2.8%	51.4%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Table 7: Cross Tabulation Table: Class and Country of Origin

Country of Origin		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Iraq	Count	0	3	2	3	9	17
	% within Iraq	0.0%	17.6%	11.8%	17.6%	52.9%	100.0%
	% within Class	0.0%	10.7%	20.0%	20.0%	90.0%	15.9%
	% of Total	0.0%	2.8%	1.9%	2.8%	8.4%	15.9%
Burma	Count	17	12	0	7	0	36
	% within Burma	47.2%	33.3%	0.0%	19.4%	0.0%	100.0%
	% within Class	38.6%	42.9%	0.0%	46.7%	0.0%	33.6%
	% of Total	15.9%	11.2%	0.0%	6.5%	0.0%	33.6%
Bhutan	Count	27	13	8	5	1	54
	% within Bhutan	50.0%	24.1%	14.8%	9.3%	1.9%	100.0%
	% within Class	61.4%	46.4%	80.0%	33.3%	10.0%	50.5%
	% of Total	25.2%	12.1%	7.5%	4.7%	0.9%	50.5%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Among refugees in the Resilient class, 38.6% were from Burma, while among refugees in the Deteriorating class, 42.9% originated in Burma. Next, among those in the Recovering class, 46.7% were from Burma. There were no Burmese in the Curved or the Chronic classes.

61.4% of individuals in the Resilient class were Bhutanese refugees, while 46.4% of refugees in the Deteriorating class were Bhutanese, with 80.0% of individuals in the Curved class also found to be from Bhutan. Next, 33.3% of individuals in the Recovering class were from Bhutan and finally, 10.0% of individuals in the chronic class were Bhutanese refugees.

The next analyses conducted examined the association between trajectory class and previous work type (Table 8), which was coded as none, unskilled, and skilled. The analysis did not indicate a significant association between measures; χ^2 (8) = 10.739, p = .220, Fisher's exact test p = .159, Cramer's V = .224, p = .220.

Table 8: Cross Tabulation Table: Class and Preresettlement Work Experience

Work Experience		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
None	Count	12	9	5	5	6	37
	% within None	32.4%	24.3%	13.5%	13.5%	16.2%	100.0%
	% within Class	27.3%	32.1%	50.0%	33.3%	60.0%	34.6%
	% of Total	11.2%	8.4%	4.7%	4.7%	5.6%	34.6%
Unskilled	Count	16	13	3	7	0	39
	% within Unskilled	41.0%	33.3%	7.7%	17.9%	0.0%	100.0%
	% within Class	36.4%	46.4%	30.0%	46.7%	0.0%	36.4%
	% of Total	15.0%	12.1%	2.8%	6.5%	0.0%	36.4%
Skilled	Count	16	6	2	3	4	31
	% within Skilled	51.6%	19.4%	6.5%	9.7%	12.9%	100.0%
	% within Class	36.4%	21.4%	20.0%	20.0%	40.0%	29.0%
	% of Total	15.0%	5.6%	1.9%	2.8%	3.7%	29.0%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Next, analyses were conducted between education level and trajectory class (Table 9). In these analyses, education level was coded as none, primary, high school, and college plus (i.e., bachelors or postbaccalaureate degree). The analysis failed to indicate a significant association between these measures; χ^2 (12) = 13.441, p = .338, Fisher's exact test p = .400, Cramer's V = .205, p = .338.

Analyses were also conducted between English skill level and trajectory class (Table 10). English level was coded as none, limited, and sufficient in the analysis. No significant association was found between these measures; χ^2 (8) = 12.175, p = .143, Fisher's exact test p = .157, Cramer's V = .239, p = .143.

Next, analyses were conducted between violence and trajectory class (Table 11). A significant association was found between these two measures; χ^2 (4) = 33.235, p < .001, Fisher's exact test p < .001, Cramer's V = .557, p < .001. First, among refugees in the Resilient class, 6.8% had experienced violence, while among

Table 9: Cross Tabulation Table: Class and Education Level

Education Level		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
None	Count	8	6	3	6	2	25
	% within None	32.0%	24.0%	12.0%	24.0%	8.0%	100.0%
	% within Class	18.2%	21.4%	30.0%	40.0%	20.0%	23.4%
	% of Total	7.5%	5.6%	2.8%	5.6%	1.9%	23.4%
Primary	Count	8	5	0	4	0	17
	% within Primary	47.1%	29.4%	0.0%	23.5%	0.0%	100.0%
	% within Class	18.2%	17.9%	0.0%	26.7%	0.0%	15.9%
	% of Total	7.5%	13.1%	5.6%	3.7%	0.0%	15.9%
High School	Count	18	14	6	4	7	49
	% within HS	36.7%	28.6%	12.2%	8.2%	14.3%	100.0%
	% within Class	40.9%	50.0%	60.0%	26.7%	70.0%	45.8%
	% of Total	16.8%	13.1%	5.6%	3.7%	6.5%	45.8%
College +	Count	10	3	1	1	1	16
	% within College +	62.5%	18.8%	6.3%	6.3%	6.3%	100.0%
	% within Class	22.7%	10.7%	10.0%	6.7%	10.0%	15.0%
	% of Total	9.3%	2.8%	0.9%	0.9%	0.9%	15.0%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Table 10: Cross Tabulation Table: Class and English Skill Level

English		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
None	Count	16	9	7	9	4	45
	% within None	35.6%	20.0%	15.6%	20.0%	8.9%	100.0%
	% within Class	36.4%	32.1%	70.0%	60.0%	40.0%	42.1%
	% of Total	15.0%	8.4%	6.5%	8.4%	3.7%	42.1%
Limited	Count	13	4	0	3	3	23
	% within Limited	56.5%	17.4%	0.0%	13.0%	13.0%	100.0%
	% within Class	29.5%	14.3%	0.0%	20.0%	30.0%	21.5%
	% of Total	12.1%	3.7%	0.0%	2.8%	2.8%	21.5%
Sufficient	Count	15	15	3	3	3	39
	% within Sufficient	38.5%	38.5%	7.7%	7.7%	7.7%	100.0%
	% within Class	34.1%	53.6%	30.0%	20.0%	30.0%	36.4%
	% of Total	14.0%	14.0%	2.8%	2.8%	2.8%	36.4%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Table 11: Cross Tabulation Table: Class and Violence

Violence		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Violence [a]	Count	3	5	1	11	1	21
	% within Violence	14.3%	23.8%	4.8%	52.4%	4.8%	100.0%
	% within Class	6.8%	17.9%	10.0%	73.3%	10.0%	19.6%
	% of Total	2.8%	4.7%	0.9%	10.3%	0.9%	19.6%
Remainder of Sample	Count	41	23	9	4	9	86
	% within No Violence	47.7%	34.9%	10.5%	4.7%	10.5%	100.0%
	% within Class	93.2%	53.6%	90.0%	26.7%	90.0%	80.4%
	% of Total	38.3%	14.0%	8.4%	3.7%	8.4%	80.4%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Notes: [a] Victims of violence exclusive of torture

those in the Deteriorating class, 10.0% had experienced violence.

Among refugees in the Curved class, 10.0% had experienced violence, while 73.3% of refugees in the Recovering class experienced violence. Finally, among those in the Chronic class, 10.0% were found to have experienced violence.

Next, analyses focused upon the association between torture and trajectory class (Table 12). A significant association was found between these two measures; χ^2 (4) = 58.348, $p < .001$, Fisher's exact test $p < .001$, Cramer's $V = .738$, $p < .001$. First, among refugees in the Resilient class, 0.0% were found to have experienced torture. Among those in the Deteriorating class, 3.6% had experienced torture, while 20.0% in the Curved class had experienced torture. Among refugees in the Recovering class, 20.0% had experienced torture. Finally, among refugees in the Chronic class, 90.0% had experienced torture.

Next, analyses focused upon the association between trajectory class and whether individuals resettled as a single adult or with multiple adults (Table 13).

Table 12: Cross Tabulation Table: Class and Torture

Torture		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
No Torture	Count	44	27	8	12	1	92
	% within No Torture	47.8%	29.3%	8.7%	13.0%	1.1%	100.0%
	% within Class	100.0%	96,4%	80.0%	80.0%	10.0%	86.0%
	% of Total	41.1%	25.2%	7.5%	11.2%	0.9%	86.0%
Torture	Count	0	1	2	3	9	15
	% within Torture	0.0%	6.7%	13.3%	20.0%	60.0%	100.0%
	% within Class	0.0%	3.6%	20.0%	20.0%	90.0%	14.0%
	% of Total	0.0%	0.9%	1.9%	2.8%	8.4%	14.0%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Table 13: Cross Tabulation Table: Class and Resettled Adults

Adults		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Single	Count	5	4	1	3	3	16
	% within Single	31.3%	25.0%	6.3%	18.8%	18.8%	100.0%
	% within Class	11.4%	14.3%	10.0%	20.0%	30.0%	15.0%
	% of Total	4.7%	3.7%	0.9%	2.8%	2.8%	15.0%
Multiple	Count	39	24	9	12	7	91
	% within Multiple	42.9%	26.4%	9.9%	13.2%	7.7%	100.0%
	% within Class	88.6%	85.7%	90.0%	80.0%	70.0%	85.0%
	% of Total	36.4%	22.4%	8.4%	11.2%	6.5%	85.0%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

These analyses did not find a significant association between the two measures; χ^2 (4) = 2.729, p = .624, Fisher's exact test p = .571, Cramer's V = .160, p = .624.

Following this, analyses were conducted to determine whether a significant association was present between family reunification and trajectory class (Table 14). The analyses failed to indicate a significant association between these two measures, χ^2 (4) = 7.256, p = .121, Fisher's exact test p = .131, Cramer's V = .260, p = .121.

Table 14: Cross Tabulation Table: Class and Family Reunification

Reunification		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
No Reunification	Count	13	11	2	1	1	28
	% within No Reunification	46.4%	39.3%	7.1%	3.6%	3.6%	100.0%
	% within Class	29.5%	39.3%	20.0%	6.7%	10.0%	26.2%
	% of Total	12.1%	10.3%	1.9%	0.9%	0.9%	26.2%
Reunification	Count	31	17	8	14	9	79
	% within Reunification	39.2%	21.5%	10.1%	17.7%	11.4%	100.0%
	% within Class	70.5%	60.7%	80.0%	93.3%	90.0%	73.8%
	% of Total	29.0%	15.9%	7.5%	13.1%	8.4%	73.8%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Next, analyses were run to determine whether a significant association existed between Resettlement Self-Efficacy and trajectory class (Table 15). These analyses indicated that there was a significant association between these two measures; χ^2 (8) = 22.426, p = .004, Fisher's exact test p = .002, Cramer's V = .324, p = .004. The results indicated that low resettlement self-efficacy was most common among individuals in the Curved class (80%), and was also quite common among those in the Recovering (53.3%), Deteriorating (53.6%), and Chronic classes (50%). Medium resettlement self-efficacy was found to be most common among those in the Resilient class (65.9%), followed by those in the Chronic distress class (45.8%). Finally, high resettlement self-efficacy was most common among those in the Recovering class (20%), followed by those in the Resilient class (18.2%).

Next, analyses focused upon the association between Month 1 HSCL-25 and trajectory class (Table 16). A significant association was found between these two measures; χ^2 (4) = 67.926, p < .001, Fisher's exact test p < .001, Cramer's V = .797, p < .001. Recall that a HSCL-25 score greater than or equal to 1.75 is considered a

Table 15: Cross Tabulation Table: Class and Resettlement Self-Efficacy

Resettlement Self-Efficacy		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Low	Count	7	15	8	8	5	43
	% within Res. Self-Efficacy	16.3%	34.9%	18.6%	18.6%	11.6%	100.0%
	% within Class	15.9%	53.6%	80.0%	53.3%	50.0%	40.2%
	% of Total	6.5%	14.0%	7.5%	7.5%	4.7%	40.2%
Medium	Count	29	10	2	4	4	49
	% within Res. Self-Efficacy	59.2%	20.4%	4.1%	8.2%	8.2%	100.0%
	% within Class	65.9%	35.7%	20.0%	26.7%	40.0%	45.8%
	% of Total	27.1%	9.3%	1.9%	3.7%	3.7%	45.8%
High	Count	8	3	0	3	1	15
	% within Res. Self-Efficacy	53.3%	20.0%	0.0%	20.0%	6.7%	100.0%
	% within Class	18.2%	10.7%	0.0%	20.0%	10.0%	14.0%
	% of Total	7.5%	2.8%	0.0%	2.8%	0.9%	14.0%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

Table 16: Cross Tabulation Table: Class and Month 1 HSCL-25 Screening

Month 1 HSCL-35 Screening		*Class*					
		Resilient	*Deteriorating*	*Curved*	*Recovering*	*Chronic*	*Total*
Negative Screen	Count	42	22	7	0	0	71
	% within Negative Screen	59.2%	31.0%	9.9%	0.0%	0.0%	100.0%
	% within Class	95.5%	78.6%	70.0%	0.0%	0.0%	66.4%
	% of Total	39.3%	20.6%	6.5%	0.0%	0.0%	66.4%
Positive Screen	Count	2	6	3	15	10	36
	% within Positive Screen	5.6%	16.7%	8.3%	41.7%	27.8%	100.0%
	% within Class	4.5%	21.4%	30.0%	100.0%	100.0%	33.6%
	% of Total	1.9%	5.6%	2.8%	14.0%	9.3%	33.6%
Total	Count	44	28	10	15	10	107
	% of Total	41.1%	26.2%	9.3%	14.0%	9.3%	100.0%

positive screen and is indicative of clinically significant psychological distress. First, among refugees in the Resilient class, 95.5% screened negative on the Month 1 HSCL-25. Following this, among refugees in the Deteriorating class, 78.6% screened negative on the Month 1 HSCL-25, while of those in the Curved class, 70.0% screened negative. By contrast, none of the refugees in the Recovering or Chronic

classes screened negative during their Month 1 HSCL-25. That is, 100% of refugees from these two trajectory classes endorsed clinically significant levels of distress, at the time of the first HSCL-25 administration, to warrant a positive screen.

Table 17 presents a series of descriptive statistics relating to resettlement age on the basis of trajectory class. As shown, mean resettlement age was found to be lowest at age 30.14 among refugees in the Deteriorating class, and was found to be slightly higher at age 32.86 among those in the Resilient class. Following this, the mean age was found to be 36.20 among those in the Chronic class, 38.80 for individuals in the Curved class, and finally, was 45.53 among those in the Recovering distress class.

Next, Levene's test was conducted for the homogeneity of variances in order to determine whether this assumption was violated in the analyses of age and distress class. Levene's test for the homogeneity of variances achieved significance, indicating that this assumption was violated; Levene Statistic (4, 102) = 3.105, p = .019. The Games-Howell test was chosen as the posthoc analysis as this test does not incorporate the assumption of equal variances. Among these posthoc comparisons, only a single analysis was found to achieve statistical significance.

Table 17: Resettlement Age: Descriptive Statistics

Class	*N*	*Mean*	*Std. Dev.*	*Std. Err.*	*95% CI*		*Min*	*Max*
					Lower	*Upper*		
Resilient	44	32.86	13.358	2.014	28.80	36.92	17	77
Deteriorating	28	30.14	9.466	1.789	26.47	33.81	17	50
Curved	10	38.80	19.697	6.229	24.71	52.89	17	67
Recovering	15	45.53	16.600	4.286	36.34	54.73	18	77
Chronic	10	36.20	9.077	2.871	29.71	42.69	23	48
Total	107	34.79	14.029	1.356	32.11	37.48	17	77

Specifically, individuals in the Recovering distress class were found to be significantly older at the time of resettlement than those in the Deteriorating distress class, Mean Difference = 15.390, p = .027.

Multinomial Logistic Regression

A multinomial logistic regression was conducted to evaluate the capacity of the study variables to predict membership in each of the extracted psychological distress trajectory classes. In this analysis, 4 separate comparisons were made using the Resilient class trajectory as the reference group. The Resilient class served as an ideal comparison because it was both the largest of the 5 classes, making up 40.1% of the sample, and included those refugee participants that endorsed a consistently low level of postresettlement distress. Membership in the Resilient class was indicative of a general absence of significant psychological distress during the initial postresettlement year.

The significant variables identified in the previous set of bivariate analyses were included in an initial multinomial logistic regression model predicting respondent trajectory class. In this initial multinomial logistic regression model, country of origin did not demonstrate statistical significance. Also, while there was a significant difference in resettlement age between the Deteriorating and Recovering classes, this variable did not demonstrate significance with regards to any of the comparisons to the Resilient class. Given that the Resilient class was the reference group for the multinomial logistic regression procedure, there was no statistical advantage to maintaining resettlement age in the final regression model.

Additionally, the original regression model produced uninterpretable odds ratios due to a number of variable cells with zero frequencies in the designated reference class.

To address these limitations, country of origin and resettlement age were removed. The model was further stabilized, with regards to zero frequencies in the reference class, by setting delta to .05 during the analysis. These steps resulted in a reduced multinomial logistic regression model, shown in Table 18, which included Violence, Torture, Month 1 HSCL-25, and Resettlement Self-Efficacy as predictors.

First, resettlement self-efficacy was significant with respect to the Deteriorating class. Lower resettlement self-efficacy was associated with an increased likelihood of being in the Deteriorating class compared to the Resilient

Table 18: Multinomial Logistic Regression Model: Parameter Estimates

Class [a]	*Variable*	*B*	*Std. Error*	*Wald*	*Sig.*	*Exp(B)*
Deteriorating	Violence [b]	-.660	.990	.445	.505	.517
	Torture	-1.679	2.793	.361	.548	.187
	RSE [c]	**-.928**	**.420**	**4.872**	**.027**	**.395**
	HSCL-25	-.866	1.028	.709	.400	.421
Curved	Violence	-.146	1.415	.011	.918	.864
	Torture	-2.975	2.740	1.179	.278	.051
	RSE	**-1.907**	**.794**	**5.772**	**.016**	**.149**
	HSCL-25	-1.098	1.224	.805	.370	.334
Recovering	Violence	-2.099	1.474	2.028	.154	.123
	Torture	-4.256	2.968	2.057	.152	.014
	RSE	-.220	.710	.096	.757	.803
	HSCL-25	**-5.145**	**2.031**	**6.418**	**.011**	**.006**
Chronic	Violence	-1.103	2.951	.140	.709	.332
	Torture	**-7.452**	**3.714**	**4.025**	**.045**	**.001**
	RSE	.901	1.068	.712	.399	2.462
	HSCL-25	**-4.482**	**2.294**	**3.818**	**.050**	**.011**

Notes: [a] The reference class is: Resilient
[b] Violence exclusive of torture
[c] Resettlement Self-Efficacy

class. Specifically, for each unit decrease in resettlement self-efficacy, the odds of being in the Deteriorating distress class, relative to the Resilient class, increased by a factor of 2.53 (1 ÷ .395).

Similarly, with respect to the coefficients associated with the Curved class, resettlement self-efficacy was significant. Individuals who reported low resettlement self-efficacy were significantly more likely to be in the Curved class as compared with the Resilient class. Specifically, for each unit decrease in resettlement self-efficacy, the odds of being in the Curved distress class relative to the Resilient class increased by a factor of 6.71 (1 ÷ .149).

Next, with respect to the coefficients associated with the Recovering class, compared with the Resilient class, statistical significance was found for Month 1 HSCL-25 Screening. Specifically, individuals who screened positive on the HSCL-25 (Month 1 score ≥ 1.75) were significantly more likely to be in the Recovering class as compared with the Resilient class. The odds ratio of .006 indicated that refugees that screened positive on their initial HSCL-25 had a 167 times greater odds (1 ÷ .006) of being in the Recovering class relative to the Resilient class.

Finally, individuals who screened positive on the HSCL-25 and reported being victims of torture were significantly more likely to be in the Chronic class compared with the Resilient class. Specifically, the odds ratio of .011 indicated that refugees that screened positive on their initial HSCL-25 were 91 times more likely to be in the Chronic class relative to the Resilient class. While the odds ratio of .001 indicated that refugee victims of torture had a 1000 times greater odds (1 ÷ .001) of

experiencing Chronic distress relative to resilience across the first postresettlement year.

The particularly high odds ratios for predicting both the Recovering and Chronic classes reflect the fact that the Resilient class by definition included those refugees that demonstrated low distress throughout their first postresettlement year. By contrast the Recovering and Chronic classes by definition demonstrated high initial distress. In this way, an initially high Month 1 HSCL-25 score essentially ruled out membership in the Resilient class.

CHAPTER IV

DISCUSSION

Global insecurity and conflict resulting in refugee displacement will likely continue into the foreseeable future. For the nearly 100,000 refugees granted access to third country resettlement annually, substantial mental health benefits as well as risks are encountered. The mental health status of refugees postresettlement is well represented in the existing psychological literature; however, the extensive use of cross-sectional designs and the tendency to place primacy on refugee ethnicity or country of origin, substantially limits our understanding of the underlying heterogeneity and development of mental health during the postresettlement period.

Given that the initial postresettlement year represents the most costly and intensive stage in the resettlement process, the scarcity of longitudinal studies that focus on this period represents a substantial gap in the existing literature. The current study addressed this deficiency by examining mental health trajectories in a sample of refugees during their first postresettlement year in the United States. The aim of this study was to: (1) identify a set of trajectory classes that reflect important variations in mental health experienced by refugees during the course of their first postresettlement year, (2) describe the characteristics of each identified trajectory

class, and (3) determine significant pre and early postresettlement predictors of trajectory class membership. Study findings as well as implications for clinical practice, resettlement policy, and future research are discussed in the sections to follow.

Refugee Mental Health Trajectory Class Modeling

To start, this study sought to determine the relative heterogeneity of longitudinal mental health trajectories within a diverse sample of recently resettled refugees. While this step was essential for answering the proposed research questions, it also represented an important proof of concept and methodological inquiry itself; whether it was possible to parsimoniously model a set of mental health trajectory classes from a diverse field sample of resettled refugees.

Most existing research on refugee psychological health tends to approach the topic from a single measurement, cross-sectional design that conceptualizes mental health status as a binary distinction between health and psychopathology. This approach to the field is based on multiple assumptions that may result in a poor understanding of the underlying heterogeneity of psychological responses to the resettlement process. Refugee postresettlement psychological experience is neither static nor unidirectional. Summarizing refugees as a homogenous category and viewing their distress at a single point in time is not only overly simplistic, it is likely to be misleading given that such measurements may be used for decisions regarding service provision and the allocation of scarce resources.

The present study started from the assumption that individual refugees are unlikely to follow a common mental health trajectory during resettlement, and that the diversity of psychological experiences warrants a framework that accounts for variation and development over time. As an alternative to a cross-sectional approach, the present study benefited from statistical and methodological developments that allow for the identification of latent heterogeneity in longitudinal samples (Jung et al., 2008; Muthen, 2004). Specifically, this study employed Growth Mixture Modeling (GMM) as a means of identifying a discrete set of postresettlement mental health trajectory classes.

GMM is a useful approach to longitudinal field data because it does not assume a single population; rather it tests for the presence of latent classes of individuals within the overall sample. GMM begins with the identification of an initial single-class growth model. Then, in an iterative process, more complex models that include additional classes are tested for relative improvement of fit. The final model is determined by the adjudication of statistical markers as well as interpretability and theoretical rationale (Jung et al., 2008).

GMM analysis was possible in this study because of the extensive longitudinal data collected for each of the 107 refugee participants. The findings of the present study suggest that 5 trajectory classes sufficiently balance the underlying heterogeneity, parsimony, and interpretability within the refugee sample, allowing for variation without over extraction. The 5 trajectory classes in this study were labeled Resilient, Deteriorating, Curved, Recovering, and Chronic.

Through the use of GMM, this study was able to evaluate longitudinal mental health outcomes of a diverse sample of refugees without first imposing conventional *a priori* categorizations such as ethnicity or country of origin. An important implication of the GMM framework is that it allowed for the organization of the refugee sample according to mental health outcomes over time and not simply by the labels individuals were born into (e.g., male, female, Iraqi, Burmese, Bhutanese). This is not to say that demographic categories are not important to consider, but it avoids the assumption of primacy for these categories, which is often perpetuated in the literature.

To illustrate this point, we can consider actual refugee individuals from the present study. For example, there is a Burmese female who, postresettlement, experienced steadily increasing psychological distress. By comparison, during the same period, a second Burmese female experienced a consistently low level of distress. Now consider a Bhutanese male refugee that followed a very similar postresettlement mental health trajectory to that of the first Burmese female.

A conventional approach to researching refugee mental health would require the separation of Burmese from Bhutanese and potentially male from female refugees within the sample to determine a mean level of distress or common mental health trajectory per subgroup. Yet, as this simple example demonstrates, if we focus on country of origin and or sex as categories in analyzing differences within our sample or changes in distress over time, we will likely miss the important commonality between the first Burmese female and the Bhutanese male. In this sense, understanding their common trajectory may be more important and

informative than examining potential differences associated with demographic categories within the sample.

The issue raised in the example above is especially important when we see significant divergence in an outcome within a common demographic group. For example, in the absence of the GMM framework, we may be tempted to model an average distress trajectory for all Iraqi refugees. Yet in doing so, we would likely do a poor job of reflecting the relative health or decrease in distress of some individuals and the acute or chronic distress of others. That is, in an effort to understand what the average Iraqi refugee experiences, we may arrive at both an underestimation and an overestimation of the distress experienced by actual Iraqi individuals.

Ultimately, how individual refugees experience the resettlement process and how this changes over time should shape the type and intensity of services available to them. By relying too heavily on predefined demographic categories, we may fail to adequately recognize the underlying heterogeneity of distress experienced within and across refugee populations. By contrast, the 5-class GMM developed in the present study demonstrates that it is both feasible and informative to extract a discreet set of mental health trajectory classes from a diverse refugee field sample. In the sections to follow, discussion focuses on the predictors of trajectory class membership, important distinctions between the various model classes, and broader implications for the refugee resettlement process.

Class Characteristics, Prediction, and Theoretical Implications

The following section discusses important characteristics, distinctions, and predictors associated with the 5 trajectory classes extracted in this study. Findings are further considered within the theoretical context of refugee stress and coping according to Silove's Integrative Conceptual Framework (1999; 2006) and the Transactional Model of Lazarus et al. (1984).

The Reference: Resilient Class

Research on resilience demonstrates that the ability to respond to stressful life events without significant deviation from healthy functioning is normative rather than exceptional (Bonanno et al., 2004; Bonanno et al., 2012). Consistent with the broader literature, the Resilient trajectory class (roughly 40% of the sample) represented the largest latent refugee subgroup to emerge from the present study. Importantly, as the largest group with the lowest level of psychological distress over time, the Resilient class served as the reference for the multinomial logistic regression comparisons conducted in this study. In general, refugees in the Resilient class demonstrated very few, if any, symptoms of psychological distress during the course of their first postresettlement year. This is apparent in their initial negative screen on the HSCL-25 as well as the consistently low distress trajectory pattern reflected in Figures 5 and 6.

In light of the consistently low levels of postresettlement distress, the psychological experience of refugees in the Resilient class can be conceptualized as harmonious with regards to the 5 core psychosocial components of Silove's

Integrative Conceptual Framework (1999; 2006). Resilient refugees are likely prone to feeling safe, are able to build and maintain relationships, experience few concerns related to injustice, are secure yet flexible as they renegotiate social roles, and find existential meaning and strength in the midst of the upheavals of resettlement.

Refugees in the Resilient class reported very little violence, no torture history, and medium levels of Resettlement Self-Efficacy. Recall that for the purpose of this study, Resettlement Self-Efficacy refers to the perceived ability to cope effectively with the challenges encountered in the resettlement experience as well as the belief that coping strategies implemented will translate into positive resettlement outcomes.

From the perspective of Lazarus's Transactional Model (1984), resilient refugees likely perceive resettlement stressors accurately without appraising them as overwhelming. Furthermore, they likely see themselves as able to cope effectively and harness resources as needed when postresettlement challenges are encountered. The medium level of Resettlement Self-Efficacy common in the Resilient class suggests that there may be a "Goldie Locks" ideal whereby there is not too much and not too little, but just the right amount of Resettlement Self-Efficacy. Such a midrange self-assessment likely equates to a more realistic appraisal of challenges paired with an accurate accounting of available resources and positive resettlement outcome expectations.

Low Initial Distress: Deteriorating and Curved Classes

Important similarities and differences in the characteristics and predictors of the Deteriorating and Curved trajectory classes emerged during the analyses. To start, refugees from the Deteriorating and Curved classes demonstrated a low level of initial psychological distress comparable to that endorsed by refugees in the Resilient class. The Deteriorating and Curved classes, however, begin to differentiate from the Resilient class following the first postresettlement month. At that time, refugees from both of these groups tended to demonstrate an increase in distress. Soon after the onset of increased distress, further differentiation occurred between the Deteriorating and Curved classes. Specifically, refugees in the Deteriorating trajectory class continued to demonstrate a gradual linear increase in distress across the entire first postresettlement year. By comparison, refugees in the Curved trajectory group tended to show a rapid increase in distress during the first half of the year followed by a gradual decrease in distress during the second. Importantly, while refugees in the Curved class tended to demonstrate improvement over time from the peak of their elevated distress, by the end of the year many remained above the HSCL-25 cutoff score, suggesting a clinically significant level of impairment.

Interestingly, the divergent shapes of these 2 clusters of distress trajectories within the refugee sample warranted the extraction of 2 separate classes through the GMM framework even though the year-end distress levels for both classes were remarkably similar. This observation suggests the presence of common factors between the 2 classes that have an effect over the extended 12-month time frame, as

well as variables unique to the Curved class that may explain the rapid increase in distress during the first half of the year.

Turning to the results of the multinomial logistic regression, it is apparent that both the Deteriorating and Curved classes demonstrated a significantly lower level of Resettlement Self-Efficacy when compared to the Resilient class. For refugees that initially screened negative on the HSCL-25, lower Resettlement Self-Efficacy predicted an increased likelihood of membership in the Deteriorating or Curved classes compared to the Resilient class. That is, even though refugees in the Deteriorating and Curved classes reported low levels of initial distress, they likely experienced apprehension about how resettlement would unfold and to what degree they would be able to enact control over the process in a way that maximized positive outcomes.

Varying degrees of Resettlement Self-Efficacy fit well within the concepts of identity and role functioning proposed by Silove's Integrative Conceptual Framework (1999; 2006). Refugees accustomed to adaptation during their initial flight experiences may be challenged to reevaluate their capacity to successfully navigate life outside of a familiar geographic and cultural environment. Refugees may experience a loss of perceived autonomy and a redefinition of traditional roles or expectations upon arrival. The dramatic shifts associated with resettlement may force even the most capable of refugees to reexamine their capacity to successfully adapt.

The Transactional Model set forth by Lazarus et al. (1984) also serves as a useful heuristic for understanding the potential adverse mental health impact of low

Resettlement Self-Efficacy. The primary appraisal for refugees entering the resettlement process involves assessing the degree of relative risk that may be encountered during both the short- and long-term adjustment period. For example, a refugee must appraise a variety of short-term threats to successful resettlement such as linguistic and cultural barriers or potential unemployment. Additionally, they have to appraise more abstract and longer term threats such as shifting traditional family roles and the erosion or dilution of cultural identity within their community over time.

Resettlement Self-Efficacy represents an integration of an individual's outcome expectations for learning and adjustment with a degree of willingness and capacity to accept, change, or at minimum coexist with the social norms of the host environment. Yet, an accurate appraisal of threat and capacity to cope may be difficult to establish for refugees initially. These refugees may have unrealistic expectations and may underestimate challenges leading to the poor estimation of threats and underutilization of resources.

Perceiving the resettlement process and the complexities of adjustment as beyond one's ability to cope, as is evident in the lower Resettlement Self-Efficacy scores demonstrated by individuals in the Deteriorating and Curved classes, may result in ineffective coping strategies. Research on appraisal and coping consistently demonstrates that when a stressor is perceived as threatening, as opposed to a challenge that can be transcended, less effective coping behaviors result (Bandura, 2006; Benight & Harper, 2002; Scholz, Dona, Sud, & Schwarzar, 2002). By comparison, evaluating a potential stressor as challenging, but

anticipating a positive outcome may enable the refugee to mobilize adaptive coping resources and more effectively manage stress.

While both the Deteriorating and Curved trajectory classes demonstrated significantly lower Resettlement Self-Efficacy when compared to the Resilient trajectory class, refugees in the Curved class tended to endorse the lowest levels. Less perceived capacity to cope likely resulted in an even more negative appraisal of potential resettlement outcomes translating into a more rapid distress response and less effective adaptation. Even though the Curved class eventually endorsed distress levels similar to the Deteriorating class by the end of the postresettlement year, the disruption of the early resettlement stage, suggested by the rapid rise in distress, could result in less effective service delivery and more negative resettlement outcomes. Alternatively, the rapid rise in distress demonstrated by the Curved class may also reflect a reaction to particular postresettlement events and/or the adverse consequences of less effective resettlement service delivery.

High Initial Distress: Recovering and Chronic Classes

Both the Recovering and Chronic trajectory classes demonstrated high levels of initial postresettlement distress. The majority of refugees from these 2 classes screened positive on their first HSCL-25 administration. As with the 2 low initial distress trajectory classes, there are important similarities and differences in these 2 high initial distress groups that have potential theoretical, clinical, and policy implications. Refugees in the Recovering class demonstrated a high level of initial distress followed by a gradual decrease in distress over the course of the first

postresettlement year. By comparison, refugees in the Chronic class began their resettlement experience at a high distress level and remained significantly distressed across the majority of their first postresettlement year. This divergence between the Recovering and Chronic class trajectories is particularly important when considering the value of longitudinal assessment versus a cross-sectional approach. At month 1, refugees from both groups demonstrate initial HSCL-25 scores above the clinical cutoff for clinically significant distress. Yet over time, it is evident that there are actually 2 latent subpopulations that demonstrate very different psychological distress profiles during the course of the initial postresettlement year.

Turning to the results of the multinomial logistic regression, both the Recovering and Chronic trajectory classes demonstrated significantly higher initial distress levels when compared to the Resilient class. The positive screening on the first HSCL-25 administration enable us to separate or distinguish the Recovering and Chronic classes from those classes that began resettlement at a subclinical level of psychological distress.

With regards to the Recovering trajectory class, no additional variables, other than the HSCL-25 indicator, demonstrated significance in the multinomial logistic regression. In isolation, this finding seems to suggest that a positive screen alone on the initial HSCL-25 predicts membership in the Recovering class. However, to complete the picture, we also need to understand those variables that differentiate these refugees from those in the other initially high distress class, mainly the Chronic class.

Refugee participants in the Chronic trajectory class were most clearly differentiated from the Resilient class by both a positive screening on the initial HSCL-25 and by endorsing a history of torture. That is, the combination of screening positive on the initial HSCL-25 and being a victim of torture predicted membership in the Chronic class. By comparison, screening positive on the initial HSCL-25, in the absence of a history of torture, predicted membership in the Recovering class.

While a history of violence did not emerge as significant in the multinomial logistic regression, violence in the absence of torture was a common theme in the lives of nearly three quarters of the refugees in the Recovering class. Recall that for the purpose of this study, if a refugee indicated a history of torture, this excluded them from also being assigned the violence designation. Endorsing torture was understood to include both violence and torture within the single variable category, while violence in this study was understood to represent violence exclusive of torture. Given the frequency of violence reported among members of the Recovering class, the gradual decrease in postresettlement distress suggests that for many refugees in this class, personal safety may be the most salient component of Silove's Integrated Conceptual Framework (1999; 2006).

In terms of the Transactional model (Lazarus et al., 1984), the Recovering trajectory class may reflect a postresettlement reappraisal of the vulnerability associated with violent displacement and temporary asylum toward the gradual recognition of the greater security of the new environment. Especially for those refugees that reported being victims of violence, with time, they may learn to feel

secure and acquire effective coping skills in their new environment, thereby reducing the distress associated with perceptions of vulnerability. In this way, the Recovering class may reflect the humanitarian ideal of resettlement, whereby removing a person from threat and vulnerability facilitates their capacity to thrive and plant the necessary roots for beginning a new life.

Refugees in the Recovering trajectory class may find increased personal safety and security in resettlement, while refugees in the Chronic trajectory class, the majority of whom were victims of torture, do not appear to acquire these same benefits during the initial postresettlement year. Indeed, research has demonstrated the relative importance of intention as an intervening variable on the subsequent development of posttraumatic stress. When an injury is perpetuated intentionally by another, the chances of the victim developing an acute and or chronic stress response increases dramatically (deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010).

In light of these findings, torture can be considered the most distilled and horrific form of intentional perpetration of interpersonal violence. The very nature of torture serves to magnify the adverse impact of a posttraumatic response. Specifically, acts of torture are deliberate and methods used are intended to evoke intense fear, pain, and humiliation. Subsequent feelings of guilt, shame, anger, and betrayal may act as barriers to the development of a victim's sense of security and self-worth. Within this context, torture is considered to be a particularly potent form of trauma that frequently results in posttraumatic stress disorder or PTSD

(Momartin, Silove, Manicavasagar, & Steel, 2003; Shrestha et al., 1998; van Ommeren et al., 2001).

A strong association has been established between torture and subsequent PTSD in refugee populations (Moisander & Edston, 2003). While the HSCL-25 measure employed for the present study did not specifically address the risk for PTSD per se, the severity and chronicity of the distress endorsed by torture survivors suggests that PTSD diagnoses may be present.

The constellation of PTSD symptoms includes persistent reexperiencing of the trauma, chronic attempts to avoid situations or thoughts that trigger traumatic memories, and hypervigilance and oversensitivity to the potential for retraumatization (American Psychiatric Association, 2000). Taken together, PTSD symptoms are debilitating and can severely impact a refugee's ability to effectively negotiate the complex demands of the resettlement process.

From a theoretical perspective, torture can be conceptualized as having an acute and adverse impact on all 5 components of Silove's Integrated Conceptual Framework: Personal Safety, Attachment and Bond Maintenance, Justice, Identity and Role Functioning, and Existential Meaning (1999; 2006). Despite the objective increase in physical safety associated with resettlement, the psychological trauma inflicted through torture may be so profound that it casts a long shadow of chronic vulnerability and fear across an individual's postresettlement reality.

Torture has been shown to result in a severe loss of trust in others and the undermining of a sense of common humanity. This level of social disruption tears at the basic fabric of human relationships and the ability to attach and maintain

interpersonal bonds (Gerrity, Keane, & Tuma, 2001). Such an effect may be particularly harmful to refugees given the importance of building trust and a strong working relationship with members of the host community and resettlement service providers.

While resettlement is intended to provide humanitarian refuge to those in need, through the eyes of the torture survivor, resettlement itself may trigger memories of the traumatic experiences they endured. The very existence of the resettlement process may actually confirm the posttraumatic belief that these refugees continue to live with and are unable to escape the consequences of torture and injustice.

Torture may also result in a damaged self-image or a sense of the self as broken. Disassociation and loss of coping self-efficacy can lead an individual refugee to the belief that they are incapable of protecting or providing for themselves and others. Lastly, in accordance with Silove's model (1999; 2006), a loss of existential meaning can stem from the trauma of being tortured. Pervasive doubts about the fundamental beneficence of humankind and or a loss of meaning and even deeply held religious and cultural beliefs may occur.

With regard to the Transactional Model, torture can be understood to have a direct and severe impact on the threat and coping appraisal processes. Following torture, primary appraisal likely results in a broad conceptualization of potential threat to life and retraumatization so that even objectively safe environments or situations are experienced as dangerous. In terms of the secondary appraisal, torture victims may perceive themselves as so severely injured by the torture, or see

the torture as evidence of their powerlessness, that they also perceive that they are now incapable of adequately coping with the challenges ahead. This combination of overestimation of objective threats and underestimation of subjective capacity to cope can in turn result in what Hobfoll (1989) referred to as a resources loss spiral.

The defensive and hypervigilant response common to torture survivors can become a barrier to accessing the resources and benefits that have been designed into the resettlement system to assist them. The psychological effects of torture undermine the long-term adaptation of refugee survivors, leading to an inability to participate effectively in resettlement services or to encounter the challenges of resettlement with effective coping strategies, making an already difficult situation much worse.

5-Class Growth Mixture Model Summary

Viewed as a whole, the present 5-Class GMM shows remarkable similarity to research findings in the broader stress and coping literature. A similar pattern of heterogeneity in the trajectories of individual responses has emerged from studies investigating the disruption and longitudinal psychological effects of health crises, terrorist attacks, and war (Bonanno & Mancini, 2008; deRoon-Cassini et al., 2010; Deshields, Tibbs, Fan, & Taylor, 2006). With regards to psychological distress, refugees in the present study demonstrated that they are not much different from most people who face sudden life changing events; some suffer chronically, some get better, others get worse; but the most common response is resilience and the absence of significant psychopathology. While remaining sensitive to unique

cultural conceptualizations and interpretations of psychological phenomena is important, it is also somehow heartening to witness the common humanity reflected in our shared capacity for both tremendous resilience and profound suffering.

Implications for Improved Screening and Prediction

As the preceding discussion demonstrated, there exists significant heterogeneity in mental health responses to the refugee resettlement experience over the first year of resettlement. Despite this, resettlement service providers often work within a model of service delivery that structures the delivery of the same basic level of programming to all newly arriving refugees. The present study highlights the need to translate the class modeling and prediction results into an application that could facilitate a more flexible and efficient approach to the provision of resettlement services.

When considering potential clinical applications of the present study, it is important to recognize the context of resettlement agencies that are frequently under resourced and over burdened. It is therefore critical to acknowledge the central themes of practicality and temporal availability of information when deciding how best to apply the study findings. To act as an effective guide to service delivery, findings from the present study should be presented in a way so as to match the actual capacity and level of information available to resettlement agency staff early in the resettlement process. Information available to a resettlement agency, within 1 month of the arrival of a refugee, is on one hand rich with data and on the other hand incomplete given the diversity of individual experiences that will

unfold with time. Nonetheless, this incomplete picture must serve as a means of determining how best to deliver resettlement services, how to conceptualize adjustment progress over time, and how to measure "success" for individual refugees during the postresettlement year.

Individual refugees also step into the resettlement process with an incomplete understanding of what to expect of their new environment and the various services available to them. They may lack a true understanding of their own capacity to cope and either underestimate or overestimate the challenges ahead. It is within this nexus of incomplete and even contradictory information that both refugee and resettlement agency set out to negotiate a strategic plan for identifying and pursuing specific resettlement goals. This task requires the development of the best possible combination of services and interventions at the requisite level of intensity. Ideally, such a plan will maximize strengths, identify areas of vulnerability, and ultimately prepare each refugee to settle into their new lives with the greatest possible chance for successful long-term adjustment.

Given the complexities of the resettlement process, an important clinical implication of the present study is that it provides a framework for predicting the potential mental health trajectories that newly arriving refugees will follow. Acknowledging that substantial validation research remains, findings from the present study could potentially be used to generate a prediction tree for postresettlement mental health trajectory classes as pictured in Figure 11.

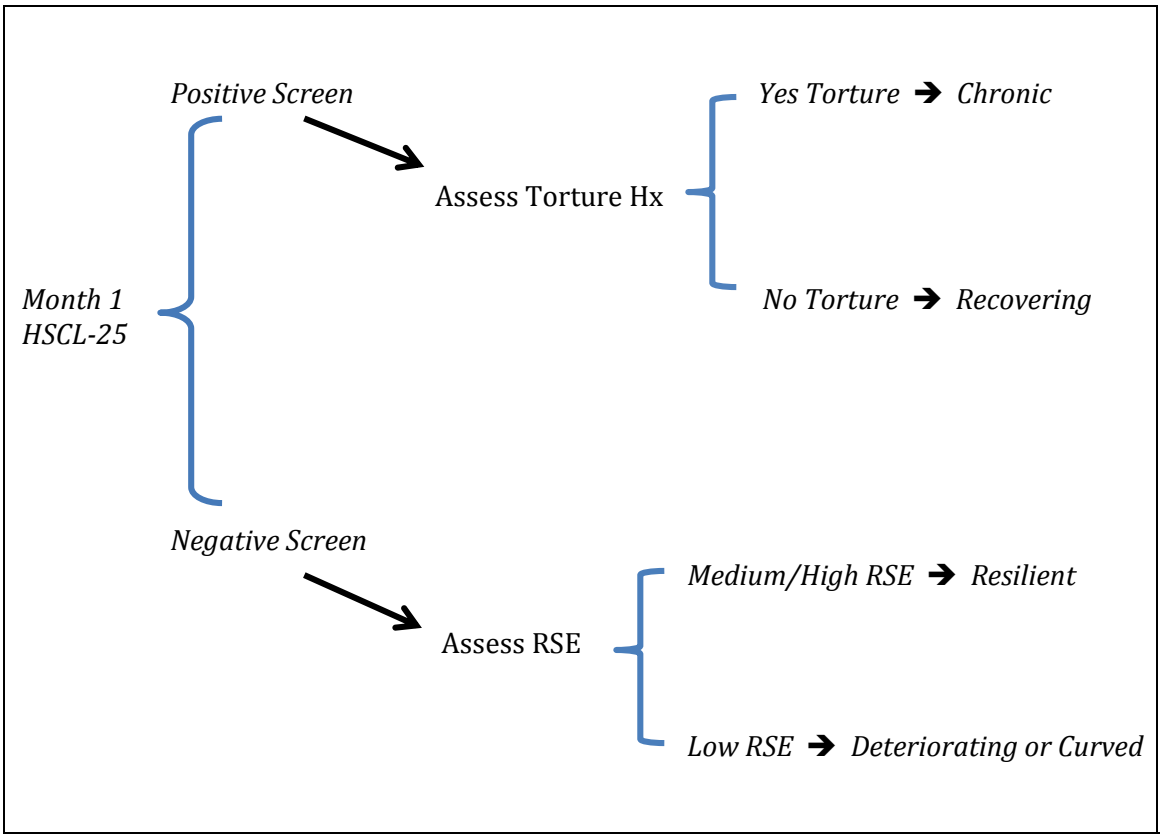

Figure 11. Prediction Tree for Postresettlement Mental Health Trajectory Classes

By utilizing the limited data available within the first postresettlement month, a clinical tool, such as the prediction tree, could allow resettlement agencies to better predict the likely mental health trajectory that each new refugee will follow. The prediction tree could then be used to better adapt services and expectations for refugee and provider alike.

The prediction tree pictured above reflects a simplified stepwise approach to applying the combined results of the growth mixture modeling and multinomial logistic regression procedures employed in the present study. The initial step in the prediction tree demonstrates the important predictive power that the first administration of the HSCL-25 provides. Based on this step in the prediction tree,

we can potentially rule out the trajectories associated with either high (Recovering or Chronic classes) or low (Resilient, Deteriorating, or Curved classes) levels of initial distress.

Following the prediction tree further, we see that for those refugees that screen negative or below the HSCL-25 clinical cut off on their initial screening, it is important to next assess their relative degree of Resettlement Self-Efficacy. For those refugees with low Resettlement Self-Efficacy, we can expect that they would follow one of 2 trajectories that demonstrate increasing distress over time (i.e., the Deteriorating or Curved classes). On the other hand, refugees with mid- to high levels of Resettlement Self-Efficacy and a negative screen on the initial HSCL-25 would most likely remain at low levels of distress and therefore follow the trajectory associated with the Resilient class.

For those refugees that screen positive or above the HSCL-25 clinical cut off, the prediction tree suggests the need to assess for a history of torture. For refugees without a history of torture, the tree indicates that we can expect elevated distress levels to decrease over the course of the initial postresettlement year so that the refugee will most likely fall within the Recovering class trajectory. However, for those refugees with a history of torture, the prediction tree indicates that those initially high distress levels will likely remain elevated over time, resulting in Chronic class trajectory membership.

Finally, a number of variables in the present study did not demonstrate sufficient predictive capacity through the multinomial logistic regression analyses. Findings in the literature that previously have linked Sex, Country of Origin,

Preresettlement Work Experience, Education, English Skill Level, Violence, and Social Support to postresettlement mental health outcomes were not replicated. It is important to note that the relatively small sample size, the potentially unique characteristics of the refugee sample in this study, and the application of Growth Mixture Modeling may explain some of the lack of correspondence with the literature. It is also worth considering that even in the absence of predictive capacity, the various configurations of these nonsignificant variables may actually be quite informative when developing tailored resettlement interventions for individual refugees.

Clinical and Resettlement Policy Implications

The further development and application of the framework demonstrated above in the proposed prediction tree could reflect an important shift in the culture of refugee resettlement systems. However, at this time, it is important to view the prediction tree outlined in Figure 11 with sufficient caution as it reflects a simplification of both the existing study data and the layers of complexities that actually exist in the field. Additional research is necessary for establishing a better understanding of postresettlement trajectory prediction before service providers should consider adopting the proposed prediction tree for actual policy or clinical applications.

With this in mind, assuming adequate refinement and validation did occur, and such a prediction tree were integrated into the resettlement service delivery matrix, this approach to refugee categorization and outcome prediction inevitably

leads to the question: How do resettlement service providers best adapt policies and programming to match the identified heterogeneity?

By determining probable distress trajectories for refugees within 1 month of arrival in the US, resettlement service providers could develop programming tailored to the specific needs of each anticipated trajectory class. While there are other important variables to consider that were outside of the scope of the present study, the findings suggest that at least with regards to mental health outcomes, the development of 4 or 5 resettlement programming tracks may be warranted. This would transform the current standard that provides the same set of basic services to all refugees into a flexible system of interventions that match the diverse needs of individual refugees as they arrive.

To start, the basic services that are provided to refugees within the current system of refugee resettlement appear sufficient for the 40% of refugees that demonstrate a resilient postresettlement trajectory. In light of this apparently positive outcome, existing resettlement services as currently provided could represent the first of the 4 proposed intervention tracks. For the remaining 60% of the sample, however, adjustments tailored to the unique needs of the 4 additional trajectory classes may be beneficial.

Targeted interventions addressing deficits in Resettlement-Self Efficacy could potentially reduce distress and increase resilience for all newly arriving refugees, but may be most beneficial to those refugees who are predicted to fall within the Deteriorating or Curved trajectory classes. A set of resettlement interventions that emphasize methods to increase self-efficacy beliefs related to

future outcomes could represent the second proposed intervention track. Following the guidance of the prediction tree, those refugees who score below the clinical cut off on their initial HSCL-25, but report low levels of Resettlement Self-Efficacy, could be referred into an alternative resettlement intervention track that emphasizes increasing self-efficacy for important resettlement related skills.

Interventions targeting deficits in Resettlement Self-Efficacy would likely be informed by social cognitive theory. This theory posits that self-efficacy, defined as a belief about one's ability to perform a specific behavior effectively, determines the acquisition of knowledge upon which related skills are later founded (Bandura, 1997; 2006). Self-efficacy has been consistently shown to influence effort, persistence in the face of difficulty, and the development of effective coping and problem solving strategies. Thus, interventions designed to improve beliefs about one's ability to perform resettlement specific coping behaviors would be expected to influence Resettlement Self-Efficacy among this population.

Self-efficacy beliefs, and therefore interventions to enhance them, are considered domain specific and would need to be tailored to the unique cross-cultural challenges endemic to refugee resettlement. The most important source of self-efficacy is the appraisal of one's previous performance (Bandura, 1997; 2006). Individual refugees engage in tasks and activities associated with resettlement outcomes such as learning to navigate the public transportation system, successfully manage complex appointment schedules, apply for employment, and read their mail. Interpretations of one's capability to engage successfully in these tasks inform one's self-efficacy beliefs. Outcomes interpreted as successful raise self-efficacy

while those viewed as failures lower it. Within this context, refugees determined to likely fall in the Deteriorating and Curved trajectory classes could benefit from interventions that break down important resettlement skills into smaller more manageable steps. Structured experiences that gradually increase in difficulty, but that result in success rather than chronic failure, can lead to an increase in self-efficacy beliefs related to important resettlement skills.

People also form self-efficacy beliefs through the vicarious experience of observing others perform tasks (Bandura, 1997; 2006). Vicarious experience is especially influential when those performing the tasks are perceived to be likable and to share common attributes with the observer. The concept of vicarious experience suggests that it may be particularly helpful to identify former refugees who may have once struggled with the same resettlement challenges but ultimately succeeded. Such individuals could be hired as resettlement service staff or informal but integrated community peer support mentors for newly resettled refugees.

A third important source of self-efficacy beliefs is an individual's experience of somatic and emotional states in the form of physiological cues (Bandura, 1997; 2006). Feelings associated with anxiety, fear, and negative mood may be interpreted as evidence of vulnerability or poor outcomes. On the other hand, feelings of calm, acceptance, and elevated mood are typically associated with confidence and positive expectancies. For those refugees identified as likely falling in the Deteriorating or Curved trajectory classes, culturally relevant interventions that address stress management through both prevention and cognitive or behavior strategies to address emotional responses may be particularly useful. Examples

could include adapted coping effectiveness training (Chesney, Chambers, Taylor, & Johnson, 2003) as well as interventions based on the Transactional Modell of Lazarus et al. (1984), which directly address the reduction in psychological distress through the acquisition of skills and strategies for adaptive coping.

Continuing to follow the guidance of the prediction tree, a third intervention track could be developed to address the unique resettlement needs of the Recovering trajectory class. Since refugees in this group are most notable through their initially high levels of distress that tend to decrease over time, the existing framework of resettlement service delivery likely already provides valuable benefits. The high levels of initial distress and the prevalence of violence in the history of many of these refugees suggests that interventions that help to increase the sense of postresettlement security may result in even more rapid reductions in distress. As an example, for refugees who were forcibly displaced from their home or neighborhood during interethnic or sectarian conflict, structured activities that increase familiarity with their new neighborhood and trust in their surrounding community may be particularly important. For refugees whom government forces may have specifically targeted during their displacement and who may harbor ongoing fear of uniformed services, helping to forge connections between refugees and individual representatives from the police and other emergency services may be an important trust-building intervention.

As reflected in the prediction tree, the defining characteristics of most refugees in the Chronic trajectory class are a positive screen on initial HSCL-25 and a reported history of torture. Given the chronicity and severity of distress endorsed

by refugees in this class throughout the postresettlement year, it is evident that the current resettlement system is failing to adequately meet their specific needs. Due to the particularly debilitating effects of torture that undermine trust in self and others and frequently result in posttraumatic stress symptoms, the existing resettlement process may even be counterproductive to the long-term adjustment and mental health of refugees in the Chronic trajectory class. The emphasis on rapidity with regards to acculturation, English language acquisition, employment, and the implicit demand that refugees quickly form trusting relationships with resettlement service providers may be at minimum, unrealistic, and at worst, harmful.

Herein lies the most challenging paradox of the resettlement process. Those refugees most in need of resettlement services may be least likely to benefit from the system currently in place to serve them. The perceived loss of capacity following torture can result in such a level of insecurity and vulnerability that further losses during resettlement may lead to a cycle of worsening outcomes. By slowing the pace of expectations for cultural adaptation, language acquisition, and rapid employment, resettlement service providers may allow this group of refugees the time and space needed for the treatment of traumatic psychological injuries and, ultimately, interrupt this downward spiral.

Limitations

The present study represents an important step forward in our understanding of longitudinal refugee mental health outcomes; however, several

limitations are important to note. These include the relatively small sample within a limited geographic region, validity threats associated with cross-cultural measurement of psychological constructs, lack of preresettlement baseline mental health data, potential unaccounted for nested family effects, and the absence of modeling data related to significant postresettlement milestones or experiences.

The representativeness of the sample and therefore the generalizability of the study findings were limited by the relatively small sample size and the reliance on a single geographic resettlement region. Though the sample reflects resettlement trends during 2011 within the study region, it may not be representative of broader national or international trends. It remains unclear how the present 5-class model and associated class membership predictor variables would correspond to postresettlement mental health trajectories across other resettlement communities.

The relatively small sample size also likely contributed to problems with zero cell values in the multinomial logistic regressions conducted. While adjustments to the analyses were used to address this issue, a larger sample size that included additional refugee groups may have permitted a more direct interpretation of the likelihood of class membership associated with certain study variables. Additionally, the GMM trajectory class extraction process was limited by low class membership counts when looking beyond the identified 5-class model. It is possible that additional mental health trajectory classes exist, but simply were not detected due to the particular characteristics and relatively small size of this study sample.

The present study was based on the longitudinal measurement of

postresettlement mental health assessed using a single self-report measure repeatedly. Demand, expectancy, and practice threats to measurement validity therefore represent potential limitations of the overall findings. While the self-report measure used in the study, the HSCL-25, demonstrated strong psychometric properties in prior research, 2 out of the 3 cultural and linguistic versions of the measure were developed specifically for the present study. Though procedures were implemented to adapt the 3 linguistic versions of the HSCL-25 that were used, this study inevitably relied upon these measures without fully establishing their respective psychometric properties. Additionally, the HSCL-25 is limited to symptoms of depression and anxiety and does not include symptoms specifically associated with PTSD. Particularly with regards to the Chronic trajectory class, the absence of PTSD symptoms on the HSCL-25 hindered the ability to directly link a history of torture to a specific posttraumatic response. Finally, the construct of Resettlement Self-Efficacy was based on a set of questions posed to each refugee by the resettlement agency and cannot, in and of itself, be considered a validated cross-cultural measurement tool of this construct.

The present study considered a number of variables as predictors of postresettlement mental health; however, there are likely many other variables that were not included in the study that also predict mental health outcomes over time. For example, baseline predisplacement mental health or psychological functioning was not available for inclusion in the present study. In the absence of this information, it is unclear to what degree early postresettlement distress levels were associated with changes upon arrival to the United States or were a reflection of

continuity from displacement through arrival in country for resettlement.

Additionally, the GMM procedures in the present study did not account for potential family nesting effects. From the total sample of 107 refugees, there were 34 cases where 2 or more refugee adults resettled together. Given the shared experiences across the displacement and resettlement processes, potentially unaccounted nesting effects may have influenced the psychological distress patterns within refugee families in this sample, thereby impacting trajectory class membership outcomes.

Finally, this study chose to focus on the predictive value of those variables available to a resettlement agency during the initial postresettlement month. While this perspective reflects the limited frame of reference that resettlement service providers may have when trying to evaluate likely mental health trajectories, it did not allow for the modeling of significant experiences that may occur later in the resettlement process. For example, specific postresettlement events or milestones may be particularly important in understanding the differences between the Curved and Deteriorating distress trajectory classes. Given that these 2 groups start and end the first postresettlement year in very similar places, but follow quite different trajectories in between, it is possible that the refugees in the Curved distress trajectory class represent a subset of the Deteriorating trajectory class who experienced a specific event that triggered a more rapid increase in mental health distress. Viewed together, the Deteriorating and Curved class trajectories suggest that there are likely low grade but persistent stressors (e.g., adaptation to unfamiliar environment, racism, loss of culture or religious support) impacting both groups as

well as specific resettlement events (e.g., failure to secure employment or change in health benefits) that may trigger an acute distress response for members of the Curved trajectory class. The lack of data in the present study reflecting significant postresettlement experiences, however, does not allow for the modeling of these potential effects at this time.

Future Research

Several areas of future research could potentially expand upon the results of the present study. These include increasing the size and scope of the refugee sample to be studied to address broader inclusion and generalizability, evaluation of new measures for use in refugee longitudinal mental health research, integration of preresettlement baseline mental health data into the longitudinal framework, evaluating postresettlement factors that may contribute to mental health trajectory outcomes, validating the proposed prediction tree for postresettlement mental health trajectories to be used in the field, and more fully investigating the characteristics and predictors of refugee resilience.

Results of the present study suggest 5 prototypical mental health trajectory classes for refugees during their first postresettlement year. Future research could expand on these findings by examining larger samples of refugees and including a broader range of displaced refugee populations. Samples collected from various resettlement sites and across multiple refugee resettlement agencies could expand on the results of the present study as well as account for potential regional or agency differences.

Future longitudinal refugee mental health research would also benefit greatly from the investigation of the validity of other mental health measures. The present study relied on the HSCL-25 to assess mental health, but this measure did not include symptoms commonly associated with PTSD. In response to this deficiency, the Refugee Health Screener (RHS-15) was recently developed (Hollifield, Verbillis-Kolp, Farmer et al., 2013). This measure has been translated into multiple languages and cultural validation work is underway with a variety of refugee groups. The RHS-15 includes PTSD symptoms as well as a brief question associated with coping self-efficacy, which corresponds to the concept of Resettlement Self-Efficacy investigated in this study. The RHS-15 has demonstrated strong psychometric properties across a variety of refugee groups, but has yet to be investigated as a means to assess clinically significant change over time. Application of the RHS-15 as well as other mental health outcome measures to the longitudinal framework of the present study will be an important area of further research.

The longitudinal framework used in the present study represents an important step toward better understanding the development of refugee mental health over time, but is somewhat constrained by the absence of information on preresettlement baseline mental health. Though difficult to attain, future research should aim to include preresettlement refugee mental health data. This would enable researchers to better model and thereby understand the specific effects of geographic relocation through resettlement on refugee mental health outcomes.

Future research may also build upon the present study by critically evaluating the potential effects of events that occur beyond the initial

postresettlement month. For example, what is the impact of securing stable employment, or conversely, failing to do so, on mental health? How does resettlement self-efficacy change over time and what impact does this have on mental health longitudinally? Do rapid month-to-month changes in distress (i.e., demonstrated by a number of individuals in the Curved and Recovery distress classes) reflect a particular qualitative and clinically significant difference not captured by the trajectory class framework of the existing GMM approach? How do specific resettlement interventions impact refugee mental health outcomes? Do refugees referred for mental health treatment demonstrate improvements over time? Answers to these questions would further develop our understanding of the unique risks and benefits imbedded in the resettlement experience.

Extending the present framework beyond the initial postresettlement year would also provide valuable information. This study relied on monthly assessments during the initial year of resettlement, but longer-term follow up could be accomplished on a less frequent interval and yet still provide for meaningful modeling data. The inclusion of significant postresettlement experiences, milestones or distal outcomes could also serve to validate the 5-class trajectory model and help substantiate the proposed class prediction tree as a viable tool for use in the resettlement process. For example, assessing the relationship between trajectory class membership and financial self-sufficiency may demonstrate poor long-term outcomes for the Chronic, Deteriorating, and Curved trajectory classes beyond the specific mental health domain. Alternatively, distal outcomes may actually show that the despite the heterogeneity demonstrated in the present study,

refugee mental health trajectories may be more homogeneous within 3 to 5 years postresettlement and initial class membership may not be predictive of long-term resettlement success or failure.

Research on refugee mental health, like much of the psychological literature, tends to focus on deficits and adverse reactions to difficult life events or trauma. The present study demonstrated that contrary to this emphasis in the refugee research literature, resilience is actually the most common postresettlement response for the refugee population studied. Resilience, however, is likely more than simply the absence of significant distress. Additional study focused on the characteristics of individual refugees who respond resiliently to adversity and trauma may better inform how best to provide resettlement services to those refugees who do not demonstrate this resilience.

Finally, if we assume that the latent class modeling and associated prediction framework of the present study is valid and fruitful areas for future research, we must also assume that our capacity for increasingly more accurate prediction will only improve with time. Yet from this knowledge, there emerge significant ethical and moral questions that touch upon the basic tenants of the resettlement system. If we know that a refugee has a high probability of chronic psychological distress postresettlement, should we offer the possibility of resettlement to these individuals at all? Alternatively, should selection of individual refugees for resettlement be based upon the probability of successful outcomes derived from sophisticated prediction models? Such questions emerge quite innocently from the consequences of an enhanced ability to accurately predict a variety of important resettlement

outcomes. Yet these same questions also represent a threat to the basic humanitarian imperative in which the resettlement system exists.

To allow predicted adverse outcomes to justify barring certain refugees from resettlement would represent a distortion of the humanitarian aim of the system itself. Instead, it is important that predicted outcomes be used to increase transparency and to inform the development of new resettlement interventions. Greater understanding of the underlying heterogeneity of postresettlement mental health could increase transparency and informed consent for refugees as they deliberate whether or not to pursue resettlement. This may allow refugees to more accurately appraise the risks and benefits of the process as well as gauge their perceived ability to cope with potential postresettlement distress over time. Furthermore, by increasing our understanding, prediction, and thereby normalization of postresettlement mental health trajectories, service providers may increase their capacity to deliver specialized interventions that match the diversity of identified refugee needs. Having endured so much, refugees arriving to our country surely deserve no less.

REFERENCES

Ahearn, F. L., & Athey, J. L. (1991). *Refugee children: Theory, research and services.* Baltimore, MD: Johns Hopkins University Press.

American Psychiatric Association (Ed.) (2000). *Diagnostic and statistical manual of mental Disorders: DSM- IV-Text revision*. Washington, DC: American Psychiatric Association Press.

Aycan, Z., & Berry, J.W. (1996). Impact of employment-related experiences on immigrants' psychological well-being and adaptation to Canada. *Canadian Journal of Behavioral Science, 28,* 240-251.

Bandura A. 1997. *Self-efficacy: The exercise of control*. New York, NY: Freeman

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on psychological science*, *1*(2), 164-180.

Beiser, M. (1988). Influences of time, ethnicity and attachment on depression in Southeast Asian refugees. *The American Journal of Psychiatry, 145*, 46-51.

Beiser, M., & Hou, F. (2001). Language acquisition, unemployment and depressive disorder among Southeast Asian Refugees: A 10-year study. *Social Science and Medicine, 53,* 1321-1324.

Beiser, M., Johnson, P., & Turner, R.J., (1993) Unemployment, underemployment and depressive affect among Southeast Asian refugees. *Psychological Medicine, 23,* 731-743.

Beiser, M., Turner, R. J., & Ganesan, S. (1989). Catastrophic stress and factors affecting its consequences among Southeast Asian refugees. *Social Science and Medicine, 28,* 183-195.

Beiser, M. M., & Wickrama, K. S. (2004). Trauma, time and mental health: A study of temporal reintegration and Depressive Disorder among Southeast Asian refugees. *Psychological Medicine, 34*, 899-910. doi:10.1017/S0033291703001703

Benight, C. C., & Harper, M. L. (2002). Coping self-efficacy perceptions as a mediator between acute stress response and long-term distress following natural disasters. *Journal of Traumatic Stress*, *15*(3), 177-186.

Berry, J. W. (1980). Acculturation as varieties of adaptation. In A. M. Padilla (Ed.), *Acculturation: Theory, models and some new findings* (pp. 9-25). Boulder, CO: Westview Press.

Bhugra, D., Craig, T., & Bhui, K. (2010). *Mental health of refugees and asylum seekers.* New York, NY: Oxford University Press. ISBN 978-0-19-955722-6.

Bhugra, D., & Mastrogianni, A. (2004). Globalization and mental disorders: Overview with relation to depression. *British Journal of Psychiatry, 184*(1), 10-20. doi:10.1192/bjp.184.1.10

Bolton, P. P., Neugebauer, R. R., & Ndogoni, L. L. (2002). Prevalence of depression in rural Rwanda based on symptom and functional criteria. *Journal of Nervous and Mental Disease, 190*, 631-637.

Bonanno, G. A., & Mancini, A. D. (2008). The human capacity to thrive in the face of potential trauma. *Pediatrics*, *121*(2), 369-375.

Bonanno, G. A., & Mancini, A. D. (2012). Beyond resilience and PTSD: Mapping the heterogeneity of responses to potential trauma. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*(1), 74-83. doi:10.1037/a0017829

Bonanno, G. A., Papa, A., Lalande, K., Westphal, M., & Coifman, K. (2004). The importance of being flexible: The ability to both enhance and suppress emotional expression predicts long-term adjustment. *Psychological Science, 15*, 482-487. doi:10.1111/j.0956-7976.2004.00705.x

Buchwald, D., Manson, S. M., Dinges, N. G., Keane, E. M., & Kinzie, J. D. (1993). Prevalence of depressive symptoms among established Vietnamese refugees in the United States: Detection in a primary care setting. *Journal of General Internal Medicine, 8,* 76-81.

Chesney, M. A., Chambers, D. B., Taylor, J. M., Johnson, L. M., & Folkman, S. (2003). Coping effectiveness training for men living with HIV: Results from a randomized clinical trial testing a group-based intervention. *Psychosomatic Medicine*, *65*(6),1038-1046.

Colder, C. R., Campbell, R. T., Ruel, E., Richardson, J. L., & Flay, B. R. (2002). A finite mixture model of growth trajectories of adolescent alcohol use: Predictors and consequences. *Journal of Consulting and Clinical Psychology, 70*, 976-985. doi:10.1037/0022-006X.70.4.976

Colic-Peisker, V., & Walker, I. (2003). Human capital, acculturation and social identity: Bosnian refugees in Australia. *Journal of Community and Applied Social Psychology, 13*, 337-360. doi:10.1002/casp.743

Connor Schisler, A. M., & Polatajko, H. J. (2002). The individual as mediator of the person-occupation-environment interaction: Learning from the experience of refugees. *Journal of Occupational Science*, *9*(2), 82-92.

Dachyshyn, D. M. (2006). Refugee families with preschool children: Adjustment to life in Canada. In L. D. Adams & A. Kirova (Eds.), *Global migration and education: Schools, children, and families* (pp. 251-262). Mahwah, NJ: Erlbaum.

Davidson, G. R., Murray, K. E., & Schweitzer, R. (2008). Review of refugee mental health and wellbeing: Australian perspectives. *Australian Psychologist, 43*, 160-174. doi:10.1080/00050060802163041

Derogatis, L. R., Lipman, R. S., Rickels, K. K., Crescenzi, A. A., Ketzer, E. E., Van Ommeren, M. M.,...de Jong, J. M. (2002). Hopkins Symptom Checklist--25. *Journal of Traumatic Stress, 15*, 369-375.

deRoon-Cassini, T. A., Mancini, A. D., Rusch, M. D., & Bonanno, G. A. (2010). Psychopathology and resilience following traumatic injury: A latent growth mixture model analysis. *Rehabilitation Psychology*, *55*(1), 1-11.

Dong-Min, K., Wampold, B. E., & Bolt, D. M. (2006). Therapist effects in psychotherapy: A random-effects modeling of the National Institute of Mental Health Treatment of Depression Collaborative Research Program data. *Psychotherapy Research, 16*, 161-172. doi:10.1080/10503300500264911

Deshields, T., Tibbs, T., Fan, M. Y., & Taylor, M. (2006). Differences in patterns of depression after treatment for breast cancer. *Psycho-Oncology*, *15*(5), 398-406.

Eisenman, D. (2007). Screening for mental health problems and history of torture. In P. F. Walker & E. D. Barnett (Eds.), *Immigrant medicine* (pp. 633-638). Philadelphia, PA: Saunders Elsevier.

Fazel, M., Wheeler, J., & Danesh, J. (2005). Prevalence of serious mental disorder in 7000 refugees resettled in Western countries: A systematic review. *The Lancet, 365*(9467), 1309-1314. doi:10.1016/S0140-6736(05)61027-6

Fox, S., & Tang, S. (2000). The Sierra Leonean refugee experience: Traumatic events and psychiatric sequelae. *Journal of Nervous and Mental Disease, 188*, 490-495.

Gerritsen, A. A. M., Bramsen, I., Devillé, W., van Willigen, L. H. M, Hovens, J. E., & van der Ploeg, H. M. (2006). Physical and mental health of Afghan, Iranian and Somali asylum seekers and refugees living in the Netherlands. *Social Psychiatry and Psychiatric Epidemiology, 41*(1), 18-26. doi:10.1007/s00127-005-0003-5

Gerrity, E. T., Keane, T. M., & Tuma, F. (Eds.). (2001). *The mental health consequences of torture*. New York, NY: Springer.

Gorst-Unsworth, C., & Goldenberg, E. (1998). Psychological sequelae of torture and organized violence suffered by refugees from Iraq: Trauma-related factors compared with social factors in exile. *British Journal of Psychiatry, 172*, 90-94.

Hinton, D. E., Pham, T., Tran, M., Safren, S. A., Otto, M. W., & Pollack, M. H. (2004). CBT for Vietnamese refugees with treatment-resistant PTSD and panic attacks: A pilot study*. Journal of Traumatic Stress, 17*, 429-433.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513-524.

Hobfoll, S. E., Spielberger, C. D., Breznitz, S., Figley, C., Folkman, S., Lepper-Green, B., & van der Kolk, B. (1991). War-related stress: Addressing the stress of war and other traumatic events. *American Psychologist, 46,* 848-855.

Hollifield, M., Warner, T. D., Lian, N., Krakow, B., Jenkins, J. H., Kesler, & Westermeyer, J. (2002). Measuring trauma and health status in refugees: A critical review. *Journal of the American Medical Association, 288*, 611-621.

Hollifield, M., Verbillis-Kolp, S., Farmer, B., Toolson, E. C., Woldehaimanot, T., Yamazaki, J., & SooHoo, J. (2013). The Refugee Health Screener-15 (RHS-15): Development and validation of an instrument for anxiety, depression, and PTSD in refugees. *General Hospital Psychiatry*, *35*(2), 202-209.

Holtz, T. H. (1998). Refugee trauma versus torture trauma: A retrospective controlled cohort study of Tibetan refugees. *Journal of Nervous and Mental Disease, 186*, 24-34.

Hooberman, J., Rosenfeld, B., Rasmussen, A., & Keller, A. (2010). Resilience in trauma-exposed refugees: The moderating effect of coping style on resilience variables. *American Journal of Orthopsychiatry, 80*, 557-563. doi:10.1111/j.1939-0025.2010.01060.x

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2*(1), 302-317. doi:10.1111/j.1751-9004.2007.00054.x

Keyes, E. F. (2000). Mental health status in refugees: An integrative review of current research. *Issues in Mental Health Nursing, 21*, 397-410. doi:10.1080/016128400248013

Kirmayer, L. J., Narasiah, L., Munoz, M., Rashid, M., Ryder, A. G., Guzder, J., ...Pottie, K. (2011). Common mental health problems in immigrants and refugees: General approach in primary care. *Canadian Medical Association Journal, 183*(12), E959-E967. doi:10.1503/cmaj.090292

Kleijn, W. C., Hovens, J. E., & Rodenburg, J. J. (2001). Posttraumatic stress symptoms in refugees: Assessments with the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist-25 in different languages. *Psychological Reports, 88*, 527-532.

Lavik, N. J., Laake, P., Hauff, E., & Solberg, Ø. (1999). The use of self-reports in psychiatric studies of traumatized refugees: Validation and analysis of HSCL-25. *Nordic Journal of Psychiatry, 53*(1), 17-20. doi:10.1080/080394899426666

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer Publishing Company.

Lie, B. (2002). A 3-year follow-up study of psychosocial functioning and general symptoms in settled refugees. *Acta Psychiatrica Scandinavica, 106*, 415-425.

Lindert, J., von Ehrenstein, O. S., Priebe, S., Mielck, A., & Brähler, E. (2009). Depression and anxiety in labor migrants and refugees—A systematic review and meta-analysis. *Social Science & Medicine, 69*(2), 246-257. doi:10.1016/j.socscimed.2009.04.032

Majka, L. (1991). Assessing refugee assistance organizations in the United States and the United Kingdom. *Journal of Refugee Studies, 4,* 267-283.

Majka, L., & Mullan, B. (1992). Employment retention, area of origin, and type of social support among refugees in the Chicago area. *International Migration Review, 26,* 899-926.

Miller, K. E., Weine, S. M., Ramic, A., Brkic, N., Bjedic, Z., Smajkic, A.…Worthington, G. (2002). The relative contribution of war experiences and exile-related stressors to levels of psychological distress among Bosnian refugees. *Journal of Traumatic Stress, 15*, 377-387. doi:10.1023/A:1020181124118

Miller, K. E., Worthington, G. J., Muzurovic, J., Tipping, S., & Goldman, A. (2002). Bosnian refugees and the stressors of exile: A narrative study. *American Journal of Orthopsychiatry, 72,* 341-354.

Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. (1992). Harvard Trauma Questionnaire: Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *Journal of Nervous and Mental Disease, 180*, 111-116.

Mollica, R. F., McInnes, K., Sarajlić, N., Lavelle, J., Sarajlić, I., & Massagli, M. P. (1999). Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. *Journal of the American Medical Association, 282*, 433–439.

Mollica, R. F., Sarajlić, N., Chernoff, M., Lavelle, J., Sarajlić Vuković, I., & Massagli, M. P. (2001). Longitudinal study of psychiatric symptoms, disability, mortality and emigration among Bosnian refugees. *Journal of the American Medical Association, 286*, 546-554.

Mollica, R. F., Wyshak, G. G., Lavelle, J., Gorst-Unsworth, C. C., & Goldenberg, E. E. (1998). Harvard Trauma Questionnaire. *British Journal of Psychiatry, 172*, 90-94.

Mollica, R. F., Wyshak, G., de Marneffe, D., Khuon, F., & Lavelle, J. (1987). Indochinese versions of the Hopkins Symptom Checklist-25: A screening instrument for the psychiatric care of refugees. *The American Journal of Psychiatry, 144*, 497-500.

Momartin, S., Silove, D., Manicavasagar, V., & Steel, Z. (2003). Dimensions of trauma associated with posttraumatic stress disorder (PTSD) caseness, severity and functional impairment: A study of Bosnian refugees resettled in Australia. *Social Science & Medicine*, *57*(5), 775-781.

Moisander, P. A., & Edston, E. (2003). Torture and its sequel—a comparison between victims from six countries. *Forensic Science International*, *137*(2), 133-140.

Muthén, B. (2004). Latent variable analysis. Growth mixture modeling and related techniques for longitudinal data. In D. Kaplan (Ed.), *The Sage handbook of quantitative methodology for the social sciences* (pp. 345–368). Thousand Oaks, CA: Sage Publications.

Muthén, B., & Asparouhov, T. (2011). Beyond multilevel regression modeling: Multilevel analysis in a general latent variable framework. In J. J. Hox, & J. K. Roberts (Eds.), *Handbook for advanced multilevel analysis* (pp. 15-40). New York, NY: Routledge/Taylor & Francis Group.

Muthén, B.O., & Muthén, L.K. (2000). Integrating person-centered and variable-centered analysis: Growth mixture modeling with latent trajectory classes. *Alcoholism: Clinical and Experimental Research, 24,* 882–891.

Muthén, L.K., & Muthén, B.O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

National Institute of Mental Health (2005). *Any disorder among adults*. Retrieved from: http://www.nimh.nih.gov/statistics/1ANYDIS_ADULT.shtml

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, *14*(4), 535-569.

Porter, M. (2007). Global evidence for a biopsychosocial understanding of refugee adaptation. *Transcultural Psychiatry, 44*, 418-439. doi:10.1177/1363461507081639

Porter, M., & Haslam, N. (2005). Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: A meta-analysis. *Journal of the American Medical Association, 294*, 602-612.

Prendes-Lintel, M. (2001). A working model in counseling recent refugees. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (2nd ed., pp. 729-752). Thousand Oaks, CA: Sage Publications, Inc.

Rumbaut, R. G. (1989). Portraits, patterns and predictors of the refugee adaptation process: Results and reflections from the IHARP panel study. In D. W. Haines (Ed.), *Refugees as immigrants: Cambodians, Laotians and Vietnamese in America* (pp. 138-152). Totowa, NJ: Rowman and Littlefield.

Rumbaut, R. G. (1991). The agony of exile: A study of the migration and adaptation of Indochinese refugee adults and children. In F. L. Ahearn, & J. L. Athey (Eds.), *Refugee children: Theory, research, and services* (pp. 53-91). Baltimore, MD: Johns Hopkins University Press.

Sandanger, I., Moum, T., Ingebrigtsen, G., Dalgard, O. S., Sørensen, T., & Bruusgaard, D. (1998). Concordance between symptom screening and diagnostic procedure: The Hopkins Symptom Checklist-25 and the Composite International Diagnostic Interview I. *Social Psychiatry and Psychiatric Epidemiology, 33*, 345-354. doi:10.1007/s001270050064

Sandanger, I., Moum, T., Ingebrigtsen, G., Sørensen, T., Dalgard, O. S., & Bruusgaard, D. (1999). The meaning and significance of caseness: The Hopkins Symptom Checklist-25 and the Composite International Diagnostic Interview II. *Social Psychiatry and Psychiatric Epidemiology, 34*, 53-59. doi:10.1007/s001270050112

Schisler, A. M. C., & Polatajko, H. J. (2002). The individual as mediator of the person-occupation-environment interaction: Learning from the experience of refugees. *Journal of Occupational Science, 9*(2), 82-92.

Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, *18*(3), 242-251.

Schweitzer, R., Melville, F., Steel, Z., & Lacherez, P. (2006). Trauma, postmigration living difficulties, and social support as predictors of psychological adjustment in resettled Sudanese refugees. *Australian and New Zealand Journal of Psychiatry, 40*, 179-187. doi:10.1111/j.1440-1614.2006.01766.x

Shrestha, N. M., Sharma, B., Van Ommeren, M., Regmi, S., Makaju, R., Komproe, I., de Jong, J. T. V. M. (1998). Impact of torture on refugees displaced within the developing world: Symptomatology among Bhutanese refugees in Nepal. *Journal of the American Medical Association, 280*, 443–448.

Silove, D. (1999). The psychosocial effects of torture, mass human rights violations, and refugee trauma: Toward an integrated conceptual framework. *Journal of Nervous and Mental Disease, 187*, 200-207. doi:10.1097/00005053-199904000-00002

Silove, D. (2006). The impact of mass psychological trauma on psychosocial adaptation among refugees. In G. Reyes, & G. A. Jacobs (Eds.), *Handbook of international disaster psychology: Refugee mental health*, (Vol. 3, pp. 1-17). Westport, CT: Praeger Publishers/Greenwood Publishing Group.

Silove, D., & Ekblad, S. (2002). How well do refugees adapt after resettlement in Western countries? *Acta Psychiatrica Scandinavica, 106*, 401-402

Steel, Z., Silove, D., Bird, K., McGorry, P., & Mohan, P. (1999). Pathways from war trauma to posttraumatic stress symptoms among Tamil asylum seekers, refugees, and immigrants. *Journal of Traumatic Stress, 12*, 421-435.

Singer, J.D., & Willet, J.B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence.* New York, NY: Oxford University Press.

Smith Fawzi, M. C., Murphy, E. E., Pham, T. T., Lin, L. L., Poole, C. C., & Mollica, R. F. (1997). The validity of screening for posttraumatic stress disorder and major depression among Vietnamese former political prisoners. *Acta Psychiatrica Scandinavica, 95*(2), 87-93.

Smith, P., Perrin, S., Yule, W., & Rabe-Hesketh, S. (2001). War exposure and maternal reactions in the psychological adjustment of children from Bosnia-Hercegovina. *Journal of Child Psychology and Psychiatry, 42*, 395-404. doi:10.1111/1469-7610.0073287-93. doi:10.1111/j.1600-0447.1997.tb00379.x

Steel, Z., Silove, D., Chey, T., Bauman, A., Phan, T., & Phan, T. (2005). Mental disorders, disability and health service use amongst Vietnamese refugees and the host Australian population. *Acta Psychiatrica Scandinavica, 111*, 300-309. doi:10.1111/j.1600-0447.2004.00458.x

Suárez-Orozco, C., Suárez-Orozco, M. M., & Todorova, I. (2008). *Learning a new land: Immigrant students in American society.* Cambridge, MA: Belknap Press/Harvard University Press.

Thapa, S. B., & Hauff, E. (2005). Psychological distress among displaced persons during an armed conflict in Nepal. *Social Psychiatry and Psychiatric Epidemiology, 40*, 672-679. doi:10.1007/s00127-005-0943-9

Tran, T. V., Manalo, V., & Nguyen, V. T. D. (2007). Nonlinear relationship between length of residence and depression in a community-based sample of Vietnamese Americans. *International Journal of Social Psychiatry, 53*(1), 85-94.

United Nations High Commission for Refugees. (2007). *2007 UNHCR statistical yearbook: Annex Table 1.* Geneva, Switzerland: Author. Retrieved from http://www.unhcr.org/cgi-bin/texis/vtx/home/opendoc.pdf?id=4981c3dc2&tbl=stAtistics

United Nations High Commission for Refugees. (2011). *UNHCR global trends 2011.* Geneva, Switzerland: Author. Retrieved from http://www.unhcr.org/4dfa11499.html

UN General Assembly. (1984). *Convention against torture and other cruel, inhuman or degrading treatment or punishment.* United Nations, Treaty Series, vol. 1465, p. 85. Retrieved from http://treties.un.org

UN General Assembly. (1954). *Convention relating to the status of stateless persons*, 28 September 1954, United Nations, Treaty Series, vol. 360, p. 117, available at: http://www.refworld.org/docid/3ae6b3840.html

UNICEF. (2009). *Humanitarian action report 2009*. Retrieved from: http://www.unicef.org/har09

US Census Bureau. (2010). *Place of birth of the foreign born population: 2009.* Retrieved from: http://www.census.gov/ prod/2010pubs/acsbr09-17.pdf

US Congress. (1948). *Displaced Persons Act*. S. 224; Pub.L. 80-774; 62 Stat. 1009. 80th Congress; June 25, 1948.

US Department of State, Bureau of Populations, Refugees, and Migration. (2012). *Refugee admissions statistics.* Washington, DC: Author. Retrieved from http://www.state.gov/j/prm/releases/statistics/184843.htm

van Ommeren, M., de Jong J., Sharma, B., Komproe, I., Thapa S., & Cardena, E., (2001) Psychiatric disorders among tortured Bhutanese refugees in Nepal. *Archives of General Psychiatry*, 58, 475–482.

Wagner, A. K., Gandek, B., Aaronson, N. K., Acquadro, C., Alonso, J., Apolone, G., & Ware, J. E. Jr. (1998). Cross-cultural comparisons of the content of SF-36 translations across 10 countries: Results from the IQOLA project. *Journal of Clinical Epidemiology, 51*, 925–932.

Ware, J. E., Kosinski, M., Gandek, B., Aaronson, N. K., Apolone, G., Bech, P., Sullivan, M. (1998). The factor structure of the SF-36 Health Survey in 10 countries: Results from the IQOLA Project. *Journal of Clinical Epidemiology, 51*, 1159–1165.

Weine, S., Muzurovic, N., Kulauzovic, Y., Besic, S., Lezic, A., Mujagic, A., Pavkovic, I. (2004). Family consequences of refugee trauma. *Family Process, 43*, 147-160. doi:10.1111/j.1545-5300.2004.04302002.x

Weine, S. M., Vojvoda, D., Becker, D. F., McGlashan, T. H., Hodzic, E., Laub, D., & Lazrove, S. (1998). PTSD symptoms in Bosnian refugees 1 year after resettlement in the United States. *The American Journal of Psychiatry, 155*, 562-564.

Westermeyer, J. (1989). *Mental health for refugees and other migrants: Social and preventive approaches*. Springfield, IL: Charles C. Thomas.

Westermeyer, J., Callies, A., & Neider, J. (1990). Welfare status and psychosocial adjustment among 100 Hmong refugees. *Journal of Nervous and Mental Disease, 178,* 300-306.

Westermeyer, J., & Wahmanholm, K. (1989). Assessing the victimized psychiatric patient. *Hospital and Community Psychiatry, 40*, 245-249.

Wickrama, K. A. S., Beiser, M., & Kaspar, V. (2002). Assessing the longitudinal course of depression and economic integration of south-east Asian refugees: An application of latent growth curve analysis. *International Journal of Methods in Psychiatric Research, 11*(4), 154-168. doi:10.1002/mpr.133

Williams, J. W. Jr., Pignone, M., Ramirez, G., & Stellato, C. P. (2002). Identifying depression in primary care: A literature synthesis of case-finding instruments. *General Hospital Psychiatry, 24*(4), 225-237.

Winokur, A., Winokur, D. F., Rickels, K., & Cox, D. S. (1984). Symptoms of emotional distress in a family planning service: Stability over a four-week period. *British Journal of Psychiatry, 144*, 395-399. doi:10.1192/bjp.144.4.395

Yakushko, O., Backhaus, A., Watson, M., Ngaruiya, K., & Gonzalez, J. (2008). Career development concerns of recent immigrants and refugees. *Journal of Career Development, 34*, 362-396. doi:10.1177/0894845308316292

Young, M. Y., & Evans, D. R. (1997). The well-being of Salvadoran refugees. *International Journal of Psychology, 32,* 289-300.